

THE CARE AND FEEDING
OF CHILDREN

L. EMMETT HOLT, M.D.

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THE CARE AND FEEDING OF CHILDREN

A CATECHISM FOR THE USE OF MOTHERS
AND CHILDREN'S NURSES

BY

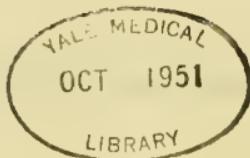
L. EMMETT HOLT, M.D., LL.D.

PROFESSOR EMERITUS OF DISEASES OF CHILDREN IN THE COLLEGE
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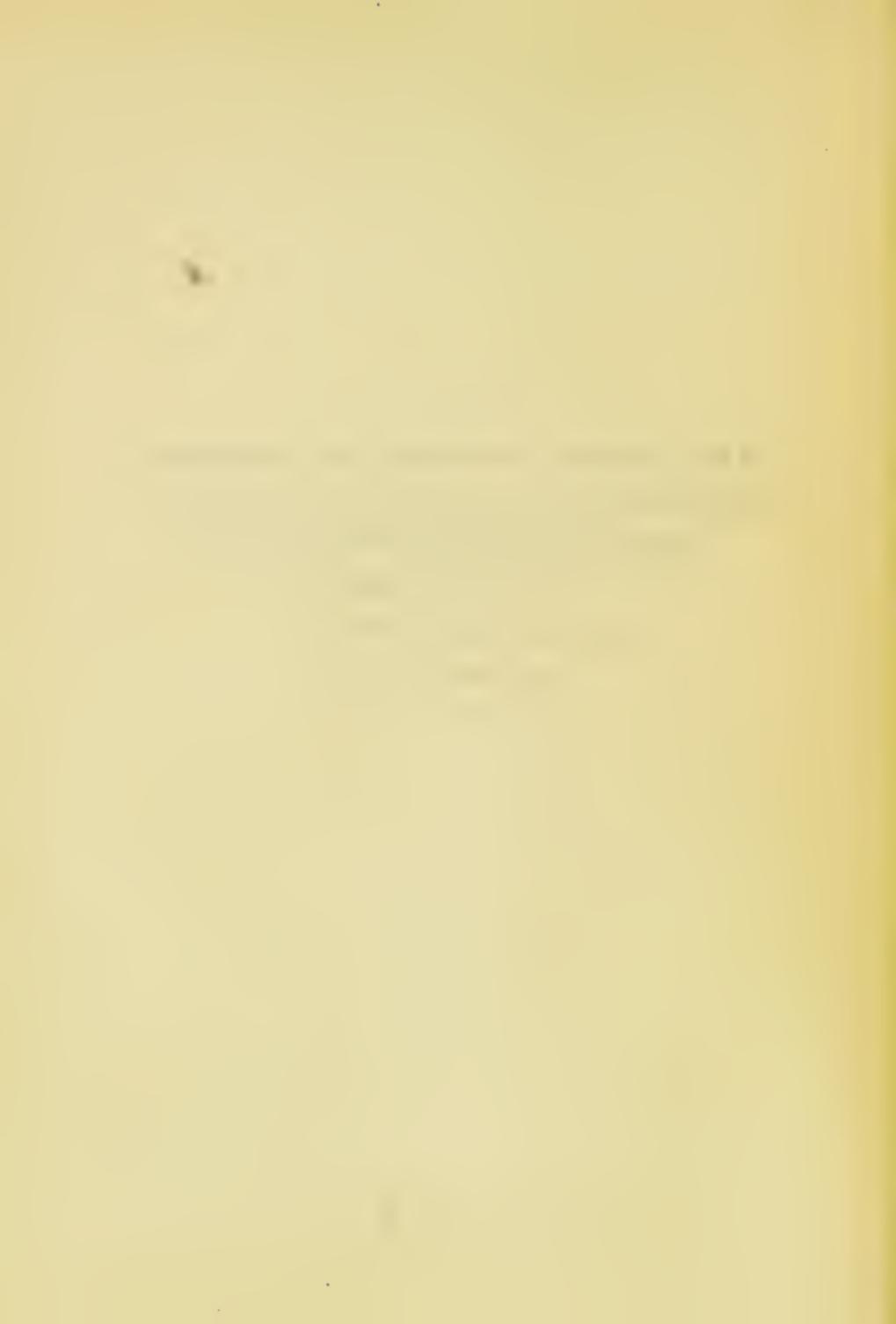
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TO
THE YOUNG MOTHERS OF AMERICA
TOWARD THE SOLUTION OF WHOSE PROBLEMS
THESE PAGES HAVE BEEN DEVOTED
THIS WORK
IS RESPECTFULLY DEDICATED
BY THE AUTHOR



PREFACE TO THE TWELFTH EDITION

The constant use of the Catechism as a manual for mothers and nurses has shown the need of fuller treatment than was given in the earlier editions of several subjects, especially matters relating to older children. To meet this need, therefore, there has been introduced in the present edition a considerable amount of new material relative to growth, nutrition, diet and health education in later childhood.

The author's aim has been not to alarm the mother by acquainting her with all the possible diseases and accidents which may befall her child, but to open her eyes to matters which are her direct and chief concern.

It is, therefore, the needs of the well child, not the sick one, which have been considered. The well child must, in most cases, be left to the care of the mother or nurse for whose guidance and assistance these pages are intended. For directions in matters of illness, however, no mother or nurse should de-

pend upon any manual, but upon the advice of a physician.

It is hoped that the mothers and nurses who have found the earlier editions helpful will find even greater assistance from the present volume.

NEW YORK, 1923.

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P A R T I

THE CARE OF INFANTS



THE CARE AND FEEDING OF CHILDREN

I

THE CARE OF INFANTS

BATHING

At what age may a child be given a full tub bath?

Usually when ten days old; it should not be given before the cord has come off.

How should the bath be given?

It should not be given sooner than one hour after feeding. The room should be warm; if possible there should be an open fire. The head and face should first be washed and dried; then the body should be soaped and the infant placed in the tub with his body well supported by the hand of the nurse. The bath should be given quickly, and the body dried rapidly with a soft towel, but with very little rubbing.

At what temperature should the bath be given?

For the first few weeks at 100° F.; later, during

early infancy, at 98° F.; after six months, at 95° F.; during the second year, from 85° to 90° F.

With what should the bath be given?

Soft sponges are useful for bathing the body, limbs and scalp. There should be a separate wash-cloth for the face and another for the buttocks.

What are the objections to bath sponges?

When used frequently, they become very dirty and are liable to cause infection of the eyes, mouth, or genital organs.

Under what circumstances should the daily tub bath be omitted?

In the case of very feeble or delicate infants on account of the exposure and fatigue, and in all forms of acute illness except by direction of the physician. In eczema and many other forms of skin disease much harm is often done by bathing with soap and water, or even with water alone.

GENITAL ORGANS

How should the genital organs of a female child be cleansed?

Best with fresh absorbent cotton and tepid water, or a solution of boric acid, one teaspoonful to eight ounces. This should be done carefully at least once a

day. If any discharge is present, the boric-acid solution should invariably be used twice a day. Great care is necessary at all times to prevent infection which often arises from soiled napkins.

How should the genital organs of a male child be cleansed?

In infancy and early childhood the foreskin should be pushed completely back at least twice a week while the child is in his bath, and the parts thus exposed washed gently with absorbent cotton and water, afterwards drawn forward again.

If the foreskin is tightly adherent and cannot readily be pushed back, the physician's attention should be called to it. The nurse or mother should not attempt forcible stretching.

When is circumcision advisable?

Usually, when the foreskin is very long and so tight that it cannot be pushed back without force; always, when this condition is accompanied by evidences of local irritation or difficulty in passing water.

EYES

How should the eyes of a little baby be cleansed?
With a piece of soft linen or absorbent cotton

and a lukewarm solution of salt or boric acid—one-half teaspoonful to eight ounces of boiled water.

If pus appears in the eyes, what should be done?

They should be cleansed every hour with a solution of boric acid (ten grains to one ounce of water). If the lids stick together, a little vaseline from a tube should be rubbed upon them at night. If the trouble is slight, this treatment will control it; if it is severe, a physician should be called immediately, as delay may result in loss of eyesight.

MOUTH

How is an infant's mouth to be cleansed?

An excellent method is by the use of a swab made by twisting a bit of absorbent cotton upon a wooden toothpick. With this the folds between the gums and lips and cheeks may be gently and carefully cleansed twice a day unless the mouth is sore. It is not necessary after every feeding. The finger of the nurse, often employed, is too large and liable to injure the delicate mucous membrane.

What is thrush?

It appears on the lips and inside the cheeks like little white threads or flakes. It is also called sprue.

In bad cases it may cover the tongue and the whole of the inside of the mouth.

How should a mouth be cleansed when there is thrush?

It should be washed carefully after every feeding or nursing with a solution of borax or bicarbonate of soda (baking soda), one even teaspoonful to three ounces of water, and four times a day the boric-acid solution mentioned on previous page should be used.

SKIN

How should the infant's skin be cared for to prevent chafing?

First, not too much nor too strong soap should be used; secondly, careful rinsing of the body; thirdly, no vigorous rubbing, either during or after the bath; fourthly, protection of deep folds of skin—under the arms, in the groins, behind the ears, about the neck, etc. This is of special importance in very fat infants. The skin here should be thoroughly dried after bathing and a powder like borated talcum used, or, even better, the folds smeared with a little liquid albolene.

If the skin is very sensitive and chafing easily produced, what should be done?

No soap should be used, but bran or salt baths given instead.

How should a bran bath be prepared?

One pint of wheat bran should be placed in a bag of coarse muslin or cheese-cloth, and this put in the bath water. It should then be squeezed for five minutes, until the water resembles a thin porridge.

How should a salt bath be prepared?

Half a teacupful of common salt or sea salt should be used to each two gallons of water.

How should the buttocks be cared for?

This is the most common place for chafing, as the parts are so frequently wet and soiled; hence the utmost pains should be taken that all napkins be removed as soon as they are wet or soiled, and the parts kept scrupulously clean and powdered or oiled.

If the parts have become chafed, what should be done?

Only bran and salt baths should be used, and in very severe cases even these may have to be omitted for a day or two. The parts may be cleansed with sweet oil and a little absorbent cotton, and the skin kept covered with a dusting powder of stearate of zinc or starch two parts, boric acid one part.

What is prickly heat, and how is it produced?

It consists of fine red pimples, and is usually caused by excessive perspiration and the irritation of woolen underclothing.

How should it be treated?

Lighter clothing should be used; muslin or linen should be put next to the skin; the entire body should be sponged frequently with equal parts of vinegar and water, and plenty of the starch and boric-acid powder mentioned should be used.

CLOTHING

What are the most essential things in the clothing of infants?

That the chest should be covered with soft flannel, the limbs well protected but not confined, and the abdomen supported by a broad flannel band, which should be snug but not too tight. It is important that the clothing should fit the body. If it is too tight it interferes with the free movements of the chest in breathing, and by pressing upon the stomach sometimes causes the infant to vomit soon after swallowing his food. If the clothing is too loose it is soon thrown into deep folds or bunches, which cause much discomfort. No pins should be used, but, in-

stead, all bands about the body should be basted. The petticoats should be supported by shoulder straps.

How should the infant be held during dressing and undressing?

Nothing is more awkward than to attempt to dress a young baby in a sitting posture. He should lie upon the nurse's lap until quite old enough to sit alone, the clothing being drawn over his feet, not slipped over the head.

Of what use is the band?

It protects the abdomen, but its most important use is to support the abdominal walls in very young infants, and in this way to prevent the occurrence of rupture. To be of any value the band should be wide, snugly applied, and pinned to the napkin below and the shirt above to keep it in place.

How long is this band required?

The snug flannel band, not usually more than two or three months. In healthy infants with plenty of fat this may then be replaced by the knitted band, which may be worn up to eighteen months. The band is an important article of dress in the case of thin infants whose abdominal organs are not sufficiently protected by fat. With such, or with those prone to diarrhea, it

is often advisable to continue the band until the third or fourth year.

What changes are to be made in the clothing of infants in the summer?

Only the thinnest gauze flannel undershirts should be worn, and changes in temperature should be met by changes in the outer garments. The greatest care should be taken that children are not kept too hot in the middle of the day, while extra wraps should be used morning and evening, especially at the sea-shore or in the mountains.

Should older children be allowed to go with their legs bare?

If strong and well there is no objection to this in warm weather. In cold weather, however, it is doubtful if any children are benefited by it, particularly in a changeable climate like that of New York. Many thin and delicate children are certainly harmed by such a practice.

What sort of underclothing should be worn during cold weather?

Never the heaviest weight, even in winter. Four grades are usually sold, the next to the heaviest being thick enough for any child.

Do little children require as heavy flannels as older people?

Not as a rule. They usually live in a warm nursery; their circulation is active; and they always perspire easily during their play. When they go out of doors, the addition of coats and leggings renders thick flannels unnecessary.

Are not many little children clothed too thinly for the ordinary house?

Very few. The almost invariable mistake made in city homes is that of excessive clothing and too warm rooms. These two things are among the most frequent reasons for their taking cold so easily.

NAPKINS

How should napkins be taken care of?

They should be immediately removed from the nursery when soiled or wet. Soiled napkins should be kept in a receptacle with a tight cover, and washed as soon as possible.

Should napkins which have been only wet be used a second time without washing?

It is no doubt better to use only fresh napkins, but there is no serious objection to using them twice

unless there is chafing of the skin. Clean napkins, changed as soon as wet or soiled, are of much importance in keeping the skin healthy.

What are the important things to be observed in washing napkins?

Soiled napkins should not be allowed to dry, but should receive a rough washing at once; they should then be kept in soak in plain water until a convenient time for washing—at least once every day—when they should be washed in hot suds and boiled at least fifteen minutes. Afterward they should be very thoroughly rinsed or they may irritate the skin, and ironed without starch or bluing. They should never be used when damp.

NURSERY

What are the essentials in a good nursery?

The furnishings should be simple, and unnecessary hangings and upholstered furniture should be excluded. As large a room as possible should be selected—one that is well ventilated, and always one in which the sun shines at some part of the day, as it should be remembered that an average child spends here at least three fourths of his time during the first year. The nursery should have dark shades at the

windows, but no extra curtains; about the baby's crib nothing but what can be washed should be allowed. The air should be kept as fresh and as pure as possible. There should be no drying of napkins or clothes, no cooking of food, and no gas burning at night. A small wax night-light answers every purpose.

How should a nursery be heated?

Best by an open fire; next to this by a Franklin stove. The ordinary hot-air furnace of cities has many objections, but it is not so bad as steam heat from a radiator in the room. A gas stove is even worse than this, and should never be used, except, perhaps, for a few minutes during the morning bath.

At what temperature should a nursery be kept during the day?

Best, 64° to 68° F., measured by a thermometer hanging three feet from the floor. The temperature should not be allowed to go above 70° F.

At what temperature during the night?

During the first two or three months, not below 65° F. After three months the temperature may go as low as 55° F. After the first year it may be 50° or even 45° F.

At what age may the window be left open at night?

Usually after the third month, except when the outside temperature is below freezing point.

How often should the nursery be aired?

At least twice a day—in the morning after the child's bath, and again in the evening before the child is put to bed for the night. This should be done thoroughly, and the child should be removed meanwhile to another apartment. It is well to air the nursery whenever the child is out of the room.

What symptoms are seen in a child who is kept in too hot a room?

He becomes pale, loses appetite, shows symptoms of indigestion, occasionally vomits, stops gaining in weight, perspires very much, and takes cold easily because of this and also because of the great difference between the indoor and outdoor temperatures. His condition may be such as to lead one to suspect very serious illness.

AIRING

How early may airing indoors be commenced and how long may it be continued?

Airing in the room may be begun with a strong, healthy child, even in cold weather, when he is one month old, at first for only fifteen or twenty minutes at a time. This period may be gradually lengthened by ten or fifteen minutes each day until it is four or five hours. This airing may be continued in almost all kinds of weather.

Is there not great danger of a young baby's taking cold when aired in this manner?

Not if the period is at first short and the baby accustomed to it gradually. Instead of rendering the child liable to take cold, it is the best means of preventing colds.

How should such an airing be given?

The child should be dressed with bonnet and light coat as if for the street and placed in his crib or carriage which should stand a few feet from the window. All the windows are then thrown wide open, but the doors closed to prevent draughts.

At what age may a child go out of doors?

In summer, when one week old; in spring and fall, usually at two or three weeks. In winter it depends upon the climate; in New York and New England on a protected piazza at two months; in the

street usually at about three months, but only on pleasant days, well protected from the wind. In large cities it is often better to place the infant for his airing, until five or six months old, on a roof or balcony or even by an open window in his carriage, to avoid the dust and wind of the street.

What are the best hours for airing out of doors?

On hot summer days, better morning and late afternoon than midday; in cold weather the best time for a young infant is between 10 A. M. and 3 P. M., although this depends somewhat upon the climate. In New York and along the Atlantic coast the early mornings are apt to be damp and the late afternoons raw and cloudy.

On what kind of days should a baby not go out?

In sharp winds, when the ground is covered with melting snow, and when it is extremely cold. A child under three months old should not usually go out if the thermometer is below freezing point; nor one under six months old if it is below 20° F.

Exceptions to all the above statements are to be made in the case of very small and especially delicate infants. Though they should have fresh air in abundance, they should be much more carefully protected against cold.

What are the most important things to be attended to when the child is out in his carriage?

To see that the wind never blows in his face, that his feet are properly covered and warm, and that the sun is never allowed to shine directly into his eyes when he is either asleep or awake.

Of what advantage to the child is going out?

Fresh air is required to renew and purify the blood, and that is just as necessary for health and growth as proper food.

What are the effects produced in infants by fresh air?

The appetite is improved, the digestion is better, the cheeks become red, and all signs of health are seen.

Is there any advantage in having a child take his airing during the first five or six months in the nurse's arms?

None whatever. A child can be made much more comfortable in a baby carriage, and can be equally well protected against exposure by blankets and the carriage umbrella.

What are the objections to an infant's sleeping out of doors?

There are no real objections. It is not true that

infants take cold more easily when asleep than awake, while it is almost invariably the case that those who sleep out of doors are stronger children and less prone to take cold than others.

What can be done for children who take cold upon the slightest provocation?

They should be kept in cool rooms, especially when asleep. They should not wear such heavy clothing that they are in a perspiration much of the time. After the morning bath the body, particularly the neck, shoulders and chest, should be sponged with cold water, temperature of 55° to 60° F. (see page 234). For young infants a slightly higher temperature may be used.

WEIGHT, GROWTH, AND DEVELOPMENT

Of what importance is the weight of the child?

Nothing else tells so accurately how well he is thriving.

During the first year a record of the weight is almost indispensable; throughout childhood it is of much interest and is the best guide to the physical condition. It will repay any mother or nurse to keep such a record.

How frequently should a child be weighed?

Every week during the first six months, and at

least once in two weeks during the last six months of the first year. After the first year a child should be weighed at least once a month.

How rapidly should an infant gain in weight during the first year?

There is usually a loss during the first week of from four to eight ounces; after this a healthy child should gain from four to eight ounces a week up to about the sixth month. From six to twelve months the gain is less, usually from two to four ounces a week.

Is it to be expected that bottle-fed infants will gain as rapidly as those who are nursed?

They seldom do so during the first month; after that time under favorable circumstances the gain is usually quite as regular, and during the latter half of the first year it is likely to be more continuous than in a nursing infant, because the latter usually loses weight at the time of weaning.

Why do they not gain so rapidly at first?

It takes a few weeks for the digestion to become accustomed to cow's milk, and until this is accomplished it is necessary to make the milk formula weak or the child's digestion will be upset.

TABLE SHOWING RATE OF GROWTH OF SMALL AND LARGE
TYPES OF HEALTHY BOYS

Birth	Weight	7	to	9	pounds
	Height	20	to	21	inches
	Chest	13	to	13½	"
	Head	13½	to	14	"
One year.....	Weight	20	to	23	pounds
	Height	28½	to	31	inches
	Chest	18	to	19½	"
	Head	18¼	to	19	"
Two years....	Weight	25	to	29¾	pounds
	Height	32½	to	36	inches
	Chest	19	to	20½	"
	Head	19	to	19½	"
Three years...	Weight	30	to	35	pounds
	Height	36	to	39½	inches
	Chest	19½	to	21½	"
	Head	19½	to	20	"
Four years...	Weight	34	to	39½	pounds
	Height	39	to	42½	inches
	Chest	20	to	22	"
	Head	19¾	to	20¼	"
Five years...	Weight	38	to	44	pounds
	Height	41½	to	45	inches
	Chest	20½	to	22½	"
	Head	20	to	20½	"

NOTE. All weights and measurements are without clothes.
The first column indicates the growth of small and the second of large children.

The weights for girls of different types are about one pound less than those of boys. Their measurements at the different ages are from one-fourth to one-half inch less than those of boys.

For a child of average weight at birth (seven and a half pounds) what should be the weight at the different periods during the first year?

At three months it should be twelve to thirteen pounds; at six months, sixteen to seventeen pounds;

at nine months, eighteen to nineteen pounds. At five months an average healthy child has doubled his weight, and at twelve months he has nearly trebled his weight. (See Chart, page 238.)

Do all healthy infants gain steadily in weight during the first year?

As a rule they do; yet it is seldom the case that one gains every week for the entire year. With most infants there are from time to time periods of a few weeks in which no gain is made. These are more often seen from the seventh to the tenth month and frequently occur when the child is cutting teeth, sometimes during very hot weather.

Is it true that every infant who gains rapidly in weight is thriving normally?

Not invariably. Some who are fed upon condensed milk or prepared infant foods increase rapidly in weight but not in strength, nor in their development in other respects.

Is the weight of as much value in the second year as a guide to the child's condition?

After the first year, the gain in weight is seldom so regular; there are many interruptions, some depend on season, and others may occur without apparent cause.

At what age should the fontanel close?

The average is about eighteen months. It seldom closes earlier than thirteen or fourteen months. In healthy children it normally closes before two years.

At what age should a child hold up his head?

As a rule during the fourth month and sometimes earlier the head can be held erect when the body is supported.

When does an infant first laugh aloud?

Usually in the fourth or fifth month.

When does he begin to reach for toys and handle them?

Usually from the fifth to the seventh month.

At what age should a child be able to sit and to stand alone?

At eight months a healthy child is usually able to sit erect and support the body. During the ninth and tenth months are usually seen the first attempts to bear the weight upon the feet, and at eleven or twelve months most children can stand by a chair.

When should a child walk alone?

The first attempts are generally seen in the twelfth

or thirteenth month. At fifteen or sixteen months the average child is able to walk quite alone.

What conditions postpone these events?

Prematurity, a very delicate constitution, any severe or prolonged illness, and especially chronic disturbances of digestion making feeding difficult. A common cause of late sitting, standing, or walking is rickets.

Should a child be urged to walk?

Never; he is usually quite willing to do so as soon as his muscles and bones are strong enough. None of the contrivances for teaching children to walk are to be advised.

When do children begin to talk?

Generally at one year a child can say "papa" and "mamma" or other single words. At the end of the second year the average child is able to put words together in short sentences.

If at two years the child makes no attempt to speak, what should be suspected?

Usually that the child is a deaf-mute or that he is mentally deficient, although this is occasionally seen in children who are in other respects quite normal.

DENTITION

How many teeth are there in the first set?

Twenty.

What is the time of their appearance?

The two central lower teeth are usually the first to appear, and come from the fifth to the ninth month; next are the four upper central teeth, which come from the eighth to the twelfth month. The other two lower central teeth and the four front double teeth come from the twelfth to the eighteenth month. Then follow the four canine teeth, the two upper ones being known as the "eye teeth," and the two lower as the "stomach teeth"; they generally come between the eighteenth and the twenty-fourth month. The four back double teeth, which complete the first set, come between the twenty-fourth and thirtieth month.

At one year a child usually has six teeth.

At one and a half years, twelve teeth.

At two years, sixteen teeth.

At two and a half years, twenty teeth.

What are the causes of variation?

The time of appearance of the teeth varies in different families; in some they come very early,

in others much later. The teeth may come late as a result of prolonged illness and also from rickets.

What symptoms are commonly seen with teething?

In healthy children there is very often fretfulness and poor sleep for two or three nights; there is a constant disposition to put the fingers into the mouth; often there is drooling and loss of appetite. There may be slight fever and looseness of the bowels with the appearance of undigested food in the stools. In delicate children all these symptoms may be much more severe.

How long do these symptoms last?

Usually only three or four days; but there may be no gain in weight for two or three weeks.

What is the cause of most of the other symptoms attributed to teething?

Nearly all of them come from indigestion due to bad feeding.

P A R T I I

INFANT FEEDING



II

INFANT FEEDING

What is the best infant food?

Mother's milk.

Of what is mother's milk composed?

Thirteen parts solids and eighty-seven water.

What are the solids?

Fat, sugar, protein, and salts.

What is the fat?

The cream.

What is the sugar?

It is lactose, or milk sugar.

What is the protein?

The curd of the milk.

Are all these elements necessary?

Yes; we cannot expect to rear a healthy infant unless they are all in his food.

Of what use is the fat?

It is needed for the growth of bones, nerves, the fat of the body, and the production of heat.

Of what use is the sugar?

It is needed for the production of heat, and to make fat in the body.

Of what use is the protein?

It is needed for the growth and repair of the body cells, such as those of the blood, the organs, and the muscles.

Of what use are the salts?

Particularly for the growth of bone.

Of what use is the water?

By means of the water the food is kept in a state of minute subdivision or in solution, so that the delicate organs of the infant can digest it. It is also necessary to enable the body to get rid of its waste.

NURSING

Why should mothers nurse their children?

First, because there is no perfect substitute for good breast-feeding. Secondly, statistics show that the mortality of bottle-fed infants during the first year is fully three times as great as that of those who are breast-fed.

At what period is nursing of greatest importance?

For the first three or four months, to give the child a proper start. During this period the mortality is highest and artificial feeding is most difficult.

When should maternal nursing not be attempted?

If the mother has or has had tuberculosis or any other serious chronic disease, or is herself in very delicate health, she should not try. She is likely soon to fail in nourishing her child, and the attempt may do herself much harm.

How often should infants be nursed during the first two days of life?

Usually only four or five times daily, since there is very little milk secreted at this time.

When does the milk come in abundance?

Usually on the third day, sometimes not until the fourth or fifth or even the ninth or tenth day.

Should the infant be fed anything additional during the first two days?

Usually not; if much food were necessary, we may be sure Nature would have provided it; but water should be given several times a day. Very large infants, nine pounds or over, are more developed and usually require to be fed on the second day.

How frequently should an infant be nursed?

The rules for the average infant are given in the following table. There are, however, many infants who do quite as well when nursed only every four hours from the very beginning.

PERIOD.	Nursings in 24 hours.	Interval by day.	Night nursings (6 P. M. to 6 A. M.)
1st and 2nd day....	4	6 hours.	1
3 days to 2 weeks..	7	3 "	2
2 weeks to 3 months	7	3 "	2
3 to 12 months.....	5	4 "	1

How long should the child be kept at the breast for one nursing?

Seldom more than ten or twelve minutes; if both breasts are given, six or seven minutes on each side. The baby gets most of the milk in the first five or six minutes. If nursed for a long time he is likely to form the habit of biting the nipples and making them sore, or of nursing and sleeping alternately while at the breast. Shortening the nursing time is a great relief to the mother and is better for the baby.

Should the child take both breasts at one nursing?

If the milk is very abundant one breast may be sufficient, otherwise both breasts may be taken.

What are the important rules in nursing?

First, regularity; it is just as important as in

bottle-feeding; secondly, the nipples should be washed after every nursing.

What should be the diet of a nursing mother?

She should have a simple but generous diet with plenty of fluids; three regular meals may be given, and gruel, milk, or cocoa at bed-time and sometimes between meals. She may take eggs, cereals, most soups, and nearly all vegetables, avoiding sour fruits, pastry, and rich desserts. Meat should usually be taken but once a day. She should take only weak tea or coffee, and ordinarily no alcoholic stimulants.

Are fruits likely to disturb a nursing infant?

Sour fruits in some cases may do so, but sweet fruits and most cooked fruits are useful.

What else is important in the life of the nursing mother?

She should lead a simple natural life; should have regular out-of-door exercise, preferably walking or driving, as soon after her confinement as her condition will permit. She should have regular movements from the bowels daily. She should be as free as possible from unnecessary cares and worry; her rest at night should be disturbed as little as possible; she should go to bed early and lie down for at least one hour in the middle of the day.

Do nervous conditions affect the milk?

Very much more than her diet; worry, anxiety, fatigue, loss of sleep, household cares, social dissipation, etc., have more than anything else to do with the failure of the modern mother as a nurse. Uncontrolled emotions, grief, excitement, fright, passion, may cause milk to disagree; at times they may excite acute illness in the child and at other times they may cause a sudden and complete disappearance of the milk.

Does menstruation affect the milk?

In nearly all cases the quantity of milk is lessened during the period so that the infant is not satisfied and may not gain in weight. In many cases the quality of the milk is also affected to such a degree as to cause slight disturbances of digestion, like restlessness, colic, or some derangement of the bowels. In a few, attacks of acute indigestion are excited.

Is the return of menstruation a reason for stopping nursing?

Not usually; as a rule both functions do not go on together. But if the child is gaining regularly in weight between the periods, nursing may be continued indefinitely, although it may be well to feed the infant wholly or in part during the first day or two that the mother is unwell.

What symptoms indicate that a nursing infant is well nourished?

He has good color, sleeps two or three hours after nursing, or, if awake, is quiet, good-natured, and apparently comfortable. He has normal movements of the bowels and gains weight steadily.

What symptoms indicate a scanty milk supply and that an infant who is nursing is not properly nourished?

He does not gain and may even lose in weight. He no longer exhibits his usual energy and playfulness, but is either listless and indifferent or cross, fretful and irritable, and is apt to sleep poorly. He grows pale and anemic and his tissues become soft and flabby. When the milk is scanty he will often nurse a long time at the breasts, sometimes three quarters of an hour, before stopping. At other times he may take the breast for a moment only, and then turn away in apparent disgust. The only sure way of telling how much milk a child is getting is to weigh him before and after nursing, four or five times a day; the child need not be undressed for this purpose.

How can the secretion of milk be increased?

The child should be put to the breasts regularly, usually given both sides every three or every four

hours. Gentle massage of the breast for ten minutes two or three times a day (they should be rubbed toward the nipple) and douching alternately with hot and cold water twice a day are useful measures. The breasts should always be completely emptied by "milking" them after the child has stopped nursing. The mother should have a generous diet, plenty of rest and sleep and freedom from worry or excitement. She should persist in her efforts and be encouraged with the assurance that she will succeed.

What should be done when the mother's milk is insufficient?

Infrequent nursing tends to reduce the milk supply. It is, therefore, better instead of alternating breast and bottle feedings as is often done, to nurse regularly and give other food after each nursing. This practice should be continued until it is evident that there is no appreciable amount of milk secreted. Toward the end of lactation a different plan may be followed; then it is well to lessen the number of nursings and replace them by entire feedings from cup or bottle.

Is there any objection to a baby being partly nursed and partly fed?

None whatever; it is often better from the out-

set to feed the baby during the night, in order not to disturb the mother's rest. If the mother has only milk enough for two or three nursings a day, this should be continued so long as her milk agrees with the baby. Even a small amount of good breast milk greatly improves a child's nutrition.

What symptoms indicate that the mother's milk disagrees with the child?

In probably the majority of cases the nursing baby who is judged to have colic or pain from indigestion, is simply hungry. This is recognized by the fact that the symptoms cease when the child is given additional food after nursing.

If the milk disagrees, the child suffers from almost constant discomfort; sleeps little and then restlessly, cries a great deal, belches gas from the stomach, and passes much by the bowels, or if not passed, the gas accumulates and causes abdominal distention and colicky pain. There may be vomiting, but more often the trouble is intestinal. Sometimes the bowels are constipated, but usually the movements are frequent, loose, green, contain mucus and are passed with much gas.

What should be done under these circumstances?

If the symptoms have persisted for two or three

weeks and the child is not gaining in weight, there is little chance of improvement, and the child should be taken from the breast at once. If there is some gain in weight, one may try for a little longer, endeavoring to improve the mother's milk by rest, fresh air, careful diet, etc. However, one should realize that the trouble is nearly always with the milk, not with the child.

What changes should be made if a nursing infant habitually vomits?

If this occurs *soon after nursing*, the infant has usually taken too much; the time of nursing should be shortened or only one breast given. Nursing should be interrupted every few moments and the child placed upright to enable him to get rid of the gas in the stomach. If the vomiting occurs *some time after nursing* and is repeated, it is a sign of indigestion; often the milk is too rich in fat. The intervals between nursings should be lengthened to four hours or even longer; the breast milk may be diluted by giving one or two tablespoonfuls of plain boiled water, or barley-water, five or ten minutes before nursing; the mother should eat less hearty food, especially less meat. If the child is thriving and gaining regularly in weight the vomiting will in most cases gradually improve with the changes in régime.

mentioned; but if the child is losing weight weaning is usually advisable.

What should be done if the infant has frequent habitual colic?

The mother should take more out-of-door exercise, eat less meat and try to control her emotions; all causes of worry should be removed. If the constipation which usually accompanies this condition is relieved, the colic will usually disappear also. It is often useful to increase the interval between the nursings.

It should be remembered that during the first two or three months some infants, especially those of a nervous type, cry much as if suffering from colic, although they have no other symptoms of indigestion and may be gaining regularly.

Can constipation in a nursing infant be controlled through the mother's milk?

Only to a limited extent. But it is important that the mother's bowels be regular and her digestion good.

Should a mother with an ordinary cold continue to nurse her baby?

The danger of infecting the child while nursing

is considerable. Many common colds are very contagious and these often have serious consequences in young infants. It is not necessary to stop nursing, but while nursing, the mother should cover her mouth and nose with a handkerchief, particularly when coughing or sneezing, and on no account should she kiss the infant.

WEANING

At what age should the child be weaned from the breast?

Usually weaning should be begun at nine or ten months by substituting one feeding a day for a nursing, later two feedings, and thus gradually the child is to be taken from the breast altogether.

What are the principal reasons for weaning earlier?

Serious illness of the mother or the occurrence of pregnancy may make this necessary. When the child is not gaining in weight, not progressing normally in development, or is suffering from some definite symptoms of indigestion such as frequent vomiting or looseness of the bowels, he should not be weaned until it is quite evident that the mother's milk is at fault. It is a safe rule not to wean when

the milk supply is abundant, but to seek some other explanation of the symptoms.

At what age should weaning be completed?

Generally at ten or eleven months. In summer it may sometimes be advisable to nurse an infant a little longer rather than wean in warm weather; but even then the dangers of weaning are much less than those of continuing to nurse, as is so often done, after the milk has become very scanty and poor in quality.

When should a child who is weaned from the breast be taught to drink from the cup, and when to take the bottle?

If weaning is done as early as the eighth or ninth month it is better to give the bottle; if from the tenth to the twelfth month the infant should be taught to drink or be fed with a spoon.

How may some difficulties in weaning be overcome?

By feeding every nursing infant once a day or by giving him water regularly from a feeding-bottle. He then becomes accustomed to the bottle. This is a matter of great convenience during the whole period of nursing when the mother or nurse may from necessity be away from the child for a few hours; when

more feedings are required at the time of weaning the child does not object.

What other food should be given to a nursing baby?

If the milk supply is abundant and the child gaining normally, nothing else need be given before the seventh or eighth month. Orange juice may then be begun and one tablespoonful of strained cereal once, and later twice, a day; the amount of each being gradually increased as described later for babies who are artificially fed.

Can a baby just weaned take cow's milk of the same strength as one of the same age who has had cow's milk from birth?

Very rarely; to give a baby who has had nothing but the breast from birth, plain cow's milk, or even that milk which a bottle-fed baby of the same age might take, is almost certain to cause indigestion. The change in the food is quite a marked one, and should be made gradually by beginning with a weak milk formula and increasing its strength as the baby becomes accustomed to take cow's milk.

What would be the proper strength of milk for an infant weaned at four or five months?

About the same as for a healthy bottle-fed infant

of two or three months; the quantity, of course, should be larger. The food can in most cases be gradually increased so that in two or three weeks the usual strength for the age can be taken.

What would be the proper proportions for an infant weaned at nine or ten months?

About the same as for a bottle-fed infant at four or five months, to be increased as indicated above.

Will not a child lose in weight when placed upon so weak a food?

Very often he will do so for the first week or two, but after that will gain quite regularly; the acute indigestion, however, which frequently accompanies the use of stronger milk, will, in most cases, cause a greater loss.

ARTIFICIAL FEEDING

What is the best substitute for mother's milk?

The milk of some other animal—cow's milk being the only one which is available for general use.

Is it not possible for infants to thrive upon other foods than those containing milk?

They may do so for a time, but not for very long. These foods lack the essentials for healthy growth.

Their long-continued use as the sole diet is attended with great risk.

What are the dangers of such foods?

Frequently scurvy is produced, and in other cases simply a condition of general malnutrition—the child, though sometimes fat, does not thrive, is pale, and his tissues are soft and flabby.

THE SELECTION AND CARE OF MILK USED FOR INFANT FEEDING

What are the essential points in milk selected for the feeding of infants?

That it comes from healthy cows, is handled only by healthy persons, and that it is clean and fresh.

Is it important to select a rich milk?

By no means; in fact the very rich milk of highly-bred Jerseys and Alderneys has not been found nearly so satisfactory in infant feeding as that from some other herds, such, for example, as the common "grade cows."

Which is the better, milk from one cow or the mixed milk of several cows?

The mixed, or "herd milk," is usually to be pre-

ferred, since it varies little from day to day; while that from a single cow may vary considerably.

How fresh is it important that cow's milk should be for the best results in infant feeding?

This depends very much upon the season, and how carefully milk is handled. As ordinarily handled at the dairy and in the home, milk should not be used for infants in winter after it is forty-eight hours old; in summer not after it is twenty-four hours old, and it may be unsafe in a much shorter time. When handled with especial care milk may be safe for a longer time.

What are the essentials in handling milk?

1. That it be kept clean and free from contamination. This necessitates that cows, stables and milkers be clean, and that transportation be in sealed bottles; also that those who handle the milk are themselves healthy and have not come in contact with any contagious disease. All milk-pails, bottles, cans, and other utensils with which the milk comes in contact should be sterilized shortly before they are used, by steam or boiling water.

2. That it be cooled immediately after leaving the cows, and kept at as low a temperature as possible; to be effective this should not be above 50° F.

Milk produced under hygienic conditions and

handled with special care is sold in bottles in most cities under the name of "certified" milk. When available such milk should be used for infants. Of course the extra care bestowed in its production and transportation increases the cost of the milk, but the best will usually be found in the end to be the cheapest.

How should milk be handled in the home when obtained fresh from the cows?

That to be used for infants should be strained through a thick layer of absorbent cotton or several thicknesses of cheese-cloth into quart glass jars or milk bottles which should be covered and cooled immediately, best by placing the bottles quite up to their necks in ice water or cold spring water, where they should stand for at least half an hour. That required for children who take plain milk may now be poured into eight-ounce bottles, stoppered with cotton, and put in the ice-chest, or the coolest place possible. This early rapid cooling is very important and adds much to the keeping qualities of the milk. Milk loses its heat very quickly when cooled in water, but very slowly when it is simply placed in a cold room. After standing four or five hours the top-milk may be removed; after twelve to sixteen hours the cream may be removed.

How should milk be handled when bottled milk is purchased?

It should be cooled as just described, as its temperature is usually somewhat raised during transportation. If it has been bottled at a dairy, the cream or the top-milk may be removed after two or three hours.

How should milk and cream be handled when they are purchased in bulk?

Such milk should never be used for infants when it is possible to obtain bottled milk, as it is much more liable to contamination. It should be poured at once in sterilized bottles and kept in the coolest place possible.

What are the important things to be secured in nursery refrigerators?

Absolute cleanliness is essential; hence the inner portion should be of tile, glass or metal. Those made entirely of metal are often unsatisfactory as in them the ice melts very quickly. If the ordinary metal refrigerator sold is encased in a wooden box, we have the best form. Another easy way of securing the same result is to make for the refrigerator a covering or "cosey" of felt or heavy quilting, which can be easily removed when wet or soiled.

The compartments of the refrigerator should be so arranged that the bottles of milk are either in con-

tact with the ice or very near it. The supply of ice should be abundant. Often the amount of ice is so small, and the bottles so far away, that the temperature of the milk is never below 60° or 65° F. To be really effective a refrigerator should have a temperature when the milk is placed of not over 50° F. The temperature should be tested with the nursery thermometer from time to time to ascertain what results are being obtained. Spoiled milk owing to a faulty refrigerator is not rarely a cause of acute illness among infants. Next to the feeding-bottles it is the one thing in the nursery which should receive the closest attention.

Are there any objections to the use of vacuum (thermos) bottles for keeping the milk warm or cold?

They are often useful to keep milk cold while traveling. They should not be used to keep milk warm as for night feedings. Milk which has been kept for several hours at the feeding temperature is often so changed as to make the baby ill.

THE MODIFICATION OF COW'S MILK

What is meant by the modification of cow's milk?

Changing its proportions so that it can be more easily digested.

Is it possible to modify cow's milk so as to make it a perfect substitute for mother's milk?

It is not. Although we can modify cow's milk so that the great majority of infants can digest it and thrive on it, it must be remembered that there are differences which cannot be wholly overcome. There are certain peculiar qualities in mother's milk which cow's milk does not possess.

How is this milk, whose proportions have been changed, distinguished from the unchanged milk?

It is usually called "modified milk"; the original milk is known as "plain milk," "whole milk," "straight milk," or simply as "milk."

What are the principal differences between cow's milk and mother's milk?

Cow's milk has only a little more than half as much sugar; but it has nearly three times as much protein and salts; its protein and fat are different from those of mother's milk and the fat is more difficult of digestion.

Are there any other important things to be considered?

Yes; mother's milk is always fed fresh and is practically sterile. Cow's milk is generally kept twenty-four hours and sometimes much longer. It

is to a greater or less degree contaminated by dirt and germs, the number of which increases rapidly (1) with the age of the milk; (2) in proportion to the amount of dust or dirt which enters it; (3) with any increase in the temperature at which the milk is kept.

It is just as important for success in infant feeding that these conditions receive attention as that the proportions of the different elements of the milk are right.

Is the addition of lime water necessary?

For some infants with feeble or disturbed digestion the addition of one ounce, sometimes as much as two ounces, of lime water to each twenty ounces of the food is useful. Its routine use for all infants is unnecessary.

How is the sugar best increased?

By adding sugar to the food; three level tablespoonfuls of milk sugar to each twenty ounces of food will give the proper quantity for the first three or four months and two tablespoonfuls for the later months. This will make the proportion about the same as in mother's milk.

How should the sugar be prepared?

Simply dissolved in boiled water; if the solution is not clear, or if there is a deposit after standing,

it should be filtered by pouring through a layer of absorbent cotton.

Will not cane (granulated) sugar answer as well as milk sugar?

Most infants appear to do well when cane sugar is used. It has the advantage of being much cheaper. A good grade of milk sugar is somewhat expensive, and cheap samples are apt to contain impurities. Moreover, there are some babies in whom diarrhea is excited if the usual amount of milk sugar is given, yet who bear cane sugar very well. There are also others, especially some constipated babies, who do better when milk sugar is used.

If cane sugar is used, what amount should be added?

Cane sugar is heavier than milk sugar; two level tablespoonfuls to each twenty ounces of the food is as much as is usually desirable. This is equivalent to three level tablespoonfuls of milk sugar.

May any other sugar be used?

Maltose¹ (malt sugar) has the advantage of being very easily digested; when part of the sugar given is

¹ Dry preparations of maltose available are "dextri-maltose" and Borchardt's "malt soup extract." Liquid preparations are

maltose, many children gain more rapidly in weight than when only milk sugar or cane sugar is used.

Has maltose any other advantages?

It is somewhat more laxative than other sugars.

Are there any disadvantages attending the use of maltose?

It is not well borne if the bowels are loose, nor should it be used for children who vomit frequently or habitually.

Is not the purpose of the sugar to sweeten the food in order to make it palatable?

Not at all; the purpose is to increase the amount of one of the essential elements needed for the growth of the body, and the one that is required by young infants in the largest quantity.

How do we know that this is so?

By the fact that in good breast milk the amount of sugar is greater than that of the fat, protein, and salts combined.

Loeflund's and the "malt soup extract" of the Maltzyme and Maltine Companies and Karo.

For an infant six months old from two teaspoonfuls to two tablespoonfuls of any of these preparations may be added to the food for the day, replacing a similar quantity of milk sugar.

Mellin's food and malted milk also contain a large percentage of maltose.

We have seen that cow's milk has much more protein (curd) and salts than mother's milk. How are these to be reduced?

By diluting the milk.

To what extent is dilution desirable?

For the early weeks the milk should be diluted twice; after three months diluting once is usually sufficient.

When cow's milk has been diluted in this way does it not contain much less fat than mother's milk?

This is quite true; but on account of the difference in the two fats it is about as much as many children can digest.

What is cream?

Cream is often spoken of as if it were the fat in milk. It is really the part of the milk which contains most of the fat. It differs from milk chiefly in containing much more fat.

In what ways is cream now obtained?

(1) By skimming, after the milk has stood usually for twenty-four hours; this is known as "gravity cream." (2) By an apparatus called a separator; this is known as "centrifugal cream"; most of the

cream now sold in cities is of this kind. The richness of any cream is indicated by the amount of fat it contains.

The usual gravity cream sold has from 16 to 20 per cent fat. The cream removed from the upper part (one-fifth) of a bottle of milk has about 16 per cent fat. The usual centrifugal cream has 18 to 20 per cent fat. The heavy centrifugal cream has 35 to 40 per cent fat.

Is cream more digestible than milk?

For most infants it is much less so; serious disturbances of digestion are often caused by cream when used in any considerable amount.

What is top-milk?

It is the thin cream removed from the top of a bottle of milk after standing a few hours.

By a 7-per-cent top-milk is meant one which contains 7 per cent fat. No richer top-milk should be used in infant feeding.

How can 7-per-cent top-milk be obtained?

From a good average milk, by removing the upper sixteen ounces, or one-half.

From a rich Jersey milk, by removing the upper twenty-two ounces, or about two-thirds.

When and how should top-milk be removed?

If milk fresh from the cow, or before the cream has risen, is put into bottles and rapidly cooled, the top-milk may be removed in as short a time as four hours. If bottled milk is purchased it makes little difference if it stands a longer time, even until the next day. The best means of removing it is by a small cream-dipper holding one ounce; although it may be taken off by a spoon or siphon. It should not be poured off.

FOOD FOR HEALTHY INFANTS¹

In deciding upon the food for young infants, what are the different points to be determined?

- (1) The amount of milk and sugar required for twenty-four hours.
- (2) The volume or the number of ounces to be given in twenty-four hours; this will of course include the milk and the water or other diluent added.
- (3) The number of feedings into which the daily food is to be divided, and the intervals at which the food is given.

¹ The directions and formulas given in the following pages are intended only for guidance in feeding children who are *not* suffering from any special disturbance of digestion; directions for such conditions are given in a later chapter.

Which is the most important?

The quantity of milk and sugar which are given. This must be sufficient for the needs of the body, which are, (1) to produce heat; (2) to repair waste; (3) to provide for growth.

What happens if too little food is given?

Since heat and waste must first be provided for, it is growth which suffers. There is not a proper gain in weight.

What happens if too much food is given?

The excess becomes a burden to the child and hinders his progress. If too much food is continued for any length of time, serious disturbances of digestion and nutrition are apt to follow. It is therefore very important to give enough, but also to give no more than the child actually needs.

How do we know how much food a healthy child needs?

This depends upon several things. Chiefly upon his weight, his size and his activity.

Is not the age also important?

It must be considered, but it is not so good a guide as the other factors. In feeding by age alone a small child is apt to get too much food and a large child

too little food. A child of three months weighing twelve pounds needs more food than a child who is three days old and who weighs twelve pounds; and a child of three months weighing twelve pounds needs more food than one of the same age who weighs but nine pounds.

Does the child's activity affect his need of food?

This is important and usually not enough considered. A laboring man working out of doors requires much more food than a book-keeper; and a lively, active, energetic infant needs more food than one who is quiet and placid; sometimes as much as a half or a third more. This need is shown in the child's appetite.

Is not then the appetite of the child a proper guide?

This is important and must always be considered, but alone it is a very unreliable guide. For many infants will regularly take much more food than they need, if it is offered.

In feeding children with disturbed digestion can the same rules be applied?

Only to a limited degree. For such infants other things must be considered, especially the nature and severity of the disturbance of digestion.

About how much food does a healthy infant require each day?

A good average allowance is one ounce of sugar a day, and one and one-half ounces of milk to each pound of the infant's weight; for example, an infant of ten pounds would require about fifteen ounces of milk, one of twelve pounds about eighteen ounces, etc. During the first three weeks of life somewhat less milk than this proportion should be given.

In feeding healthy children, if the proper amounts of milk and sugar are given, does it matter whether these are diluted much or little?

It is important, but less so than the amount of food given. The body requires a certain amount of fluid daily for the most satisfactory nutrition.

Too great a dilution of the food makes the volume of the feeding too large, overdistends the stomach and often produces vomiting. If the dilution is insufficient, the child does not usually digest his milk so well, and besides he does not receive as much fluid as he requires.

Cannot this extra fluid be given between meals as water?

This is exactly what is done with older children; but with infants, especially young infants, it is usually

difficult, and sometimes impossible, to make them take any considerable amount of water apart from the food. The easiest way is to put the water in the food, thus diluting it.

What is the simplest way of modifying milk for infant feeding?

To use whole milk in the amounts required, diluted according to the principles just laid down, adding sugar, etc.

FORMULAS FROM WHOLE MILK (4-PER-CENT FAT) FOR THE
EARLY MONTHS

FORMULA.	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
Milk oz.	6	6½	7	7½	8	8½	9	9½	10
Sugar "	1	1	1	1	1	1	1	½	½
Water "	14	13½	13	12½	12	11½	11	10½	10
Flour tablesp's	0	0	0	0	0	0	0	½	1
	—	—	—	—	—	—	—	—	—
	20	20	20	20	20	20	20	20	20

NOTE.—The sugar is 1 ounce by weight; this is equivalent to 3 level tablespoonfuls of milk sugar or maltose, and 2 level tablespoonfuls of granulated sugar.

The flour may be barley, oat, rice or wheat flour, or arrow-root cooked for twenty minutes in part of the water in the formula. Level tablespoonfuls should be used.

How should such formulas as those in the table be used?

Beginning at birth, Formula I might first be given, and the strength of the food increased every four

or five days up to No. V, after that every ten days or two weeks until No. IX is reached.

Such a formula as No. IX will be reached by an average healthy infant at two or two-and-a-half months of age. After this the next group of formulas may be used, but the increase should be made more slowly, about every three or four weeks up to No. XII, then about every six or eight weeks, reaching No. XIV at about ten months. This may be continued up to twelve months.

FORMULAS FROM WHOLE MILK FOR THE LATER MONTHS

FORMULA.	IX.	X.	XI.	XII.	XIII.	XIV.
Milkoz.	10	11	12	13	14	15½
Sugar "	¾	½	½	½	½	¼
Water "	10	9	8	7	6	4½
Flour tablesp's	1	1½	1½	1½	2	2
	—	—	—	—	—	—
	20	20	20	20	20	20

If top-milk instead of whole milk were used what changes in these formulas would be necessary?

One should use from one-third to one-fourth less milk in each of the formulas, otherwise they would be the same.

For the first two or three weeks it is well to use the formulas of the whole milk series and then those

of the top-milk series beginning with No. III. The food is increased in strength at about the same intervals in both series of formulas.

FORMULAS FROM 7-PER-CENT TOP-MILK (UPPER 16 OUNCES
FROM 1 QUART)

In Formula No.	I.	use	4	ounces	top-milk	in 20	ounces.
" "	II.	"	4½	"	"	"	"
" "	III.	"	5	"	"	"	"
" "	IV.	"	5½	"	"	"	"
" "	V.	"	6	"	"	"	"
" "	VI.	"	6½	"	"	"	"
" "	VII.	"	7	"	"	"	"
" "	VIII.	"	7½	"	"	"	"
" "	IX.	"	8	"	"	"	"
" "	X.	"	9	"	"	"	"
" "	XI.	"	9½	"	"	"	"
" "	XII.	"	10	"	"	"	"
" "	XIII.	"	10½	"	"	"	"
" "	XIV.	"	11	"	"	"	"

After No. XIV instead of taking the upper 16 ounces to obtain the top-milk, one may take off 20, and use 12 ounces of this in 20 of food; then take off 24 and use 13 ounces of this in 20 of food; then use the whole milk, 15 ounces in 20 of food which is the same as No. XIV of the whole milk series.

Under what circumstances are these top-milk formulas to be advised?

For strong, healthy children with good digestion. Such children are usually able to take food con-

taining higher fat than in the formulas from whole milk and thrive better when it is given.

Under what conditions are formulas from whole milk to be advised?

For most infants except the robust class just described.

There is a great advantage in having the two different groups of formulas for use with different types of children.

Under what conditions should top-milk formulas not be used?

They should not be given to infants with feeble digestion or to those suffering from acute or chronic disturbances of digestion, especially if vomiting is present.

How often should a young baby be fed?

Every three hours by day and twice at night (between 6 P. M. and 6 A. M.), or seven times in the twenty-four hours. At three months one of the feedings between 6 P. M. and 6 A. M. may be omitted and but six feedings given in the twenty-four hours. Some infants do quite as well when fed only every four hours from birth. The essential thing is the amount of food given in twenty-four hours.

Why should not a child be fed more frequently?

It takes the stomach from two to two and a half hours to digest a feeding of cow's milk, even when much diluted. When the food is made stronger, more time is required for digestion. If the meals are too near together the second one is given before the first has been digested; vomiting and indigestion may result. The meals should be far enough apart to give the stomach a little time for rest before the next feeding.

The number of feedings in twenty-four hours, the quantity for a single feeding and the daily quantity are given in the following table:

SCHEDULE FOR HEALTHY INFANTS FOR THE FIRST YEAR

AGE.	Interval between meals by day.	Night feedings (6 P. M. to 6 A. M.)	No. of feedings in 24 hours.	Quantity for one feeding.	Quantity for 24 hours.
2d to 7th day.....	3 hrs.	2	7	1 -2	7-14 oz.
2d to 3d week....	3 "	2	7	2 -3 $\frac{1}{2}$	14-24 "
4th to 6th week...	3 "	2	7	3 -4	21-28 "
7th to 13th week..	3 "	2	7	3 $\frac{1}{2}$ -5	25-35 "
13th to 17th week..	3 "	1	6	4 $\frac{1}{2}$ -6	27-36 "
4th to 7th month..	4 "	1	5	6 $\frac{1}{2}$ -8	33-40 "
7th to 12th month.	4 "	1	5	7 -8	35-40 "

This schedule gives the averages for healthy children. The smaller quantities are those required by small children or those whose digestion is not very vigorous. The larger quantities are those required by larger children with stronger digestion; in very

few cases will it be advisable to go above these figures.

The interval is reckoned from the beginning of one feeding to the beginning of the next one.

Under what conditions should the interval between the feedings be lengthened?

When there is gastric indigestion as shown by habitual vomiting or the regurgitation of food long after the bottle is finished; also when the appetite is very poor so that the infant regularly leaves some of his food.

When should the interval between the feedings be shortened?

This is done much too frequently; it is rarely advisable to feed any infant, except one seriously ill, oftener than the time put down in the schedule.

In the series of formulas given in the table the quantities are mentioned for making only twenty ounces of food. How should it be prepared when more than this quantity is needed?

It is equally convenient to make up 25, 30, 35, or 40 ounces at a time. For example, to make

25	ounces of any formula add one quarter more of each ingredient
30	" " " " one half "
35	" " " " three quarters "
40	" " " " twice as much "

Thus, if using Formula V one would take

To make 25 ounces.	To make 30 ounces.	To make 35 ounces.
Milk 10 oz.	Milk 12 oz.	Milk 14 oz.
Sugar 1½ "	Sugar 1½ "	Sugar 1¾ "
Water 15 "	Water 18 "	Water 21 "

The amount of water need not be calculated in any case, but after measuring carefully the other ingredients enough water should be added to bring the total up to the amount required.

PREPARATION OF COW'S MILK AT HOME

What articles are required for the preparation of cow's milk at home?

Feeding-bottles, rubber nipples, an eight-ounce graduated measuring glass, a glass or agate funnel, bottle brush, cotton, alcohol lamp or, better, a Bunsen gas burner, a tall quart cup for warming bottles of milk, a pitcher for mixing the food, a wide-mouth bottle for boric acid and one for bicarbonate of soda, and a pasteurizer. Later, a double boiler for cooking cereals will be needed.

What bottles are to be preferred?

A cylindrical graduated bottle with a rather wide neck, so as to admit of easy washing, and one which contains no angles or corners. A single size holding

eight ounces is quite sufficient for use during the first year. All complicated bottles are bad, being difficult to clean. One should have as many bottles in use as the child takes meals a day.

How should bottles be cared for?

As soon as they are emptied they should be rinsed with cold water and allowed to stand filled with water to which a little bicarbonate of soda has been added. Before the milk is put into them they should be thoroughly washed with a bottle brush and hot soap-suds and then boiled or placed for ten minutes in boiling water.

What sort of nipples should be used?

Only simple straight nipples which slip over the neck of the bottle. Those with a rubber or glass tube are complicated and impossible to keep clean. Nipples made of black rubber are to be preferred. The hole in the nipple should not be so large that the milk will run in a stream, but just large enough for it to drop rapidly when the bottle with the nipple attached is inverted.

How should nipples be cared for?

New nipples should be boiled for five minutes; but it is unnecessary to boil nipples every day, as they

soon become so soft as to be almost useless. After using, nipples should be carefully rinsed in cold water and kept in a covered glass containing a solution of borax or boric acid. They can be kept under water by placing a little absorbent cotton over them. At least once a day they should be turned inside out and thoroughly washed with soap and water.

What sort of cotton should be used?

For stoppering bottles the refined non-absorbent cotton is rather better, but the ordinary absorbent cotton will answer every purpose.

Which is better, the Bunsen burner or the alcohol lamp?

If there is gas in the house, the Bunsen burner is greatly to be preferred, being cheaper, simpler, and much safer than the alcohol lamp. If the lamp is used, it should stand upon a table covered with a plate of zinc or tin, or upon a large metal tray. The safest thing to use in the nursery is the small electric heater.

What directions are to be followed in preparing the food?

The nurse's hands, bottles, table, and all utensils should be scrupulously clean. If flour is used in

the food, this is cooked in water for twenty minutes and then sufficient boiled water added to bring the total quantity up to that called for in the formula. When this has cooled, the milk and sugar should be added and the whole mixed in a pitcher. The food for twenty-four hours is always to be prepared at one time. The amount needed for each feeding is put in a separate bottle; bottles are then stoppered with cotton and placed at once in the ice-box or the food is first pasteurized according to directions given elsewhere.

DIRECTIONS FOR FEEDING INFANTS

How should the bottle be prepared at feeding time?

It should be taken from the ice-box, and warmed by standing in a pitcher of warm water which is deep enough to cover the milk in the bottle; it should then be thoroughly shaken and the nipple adjusted; the nurse should see that the hole in the nipple is not too large nor too small.

How may the temperature of the milk be tested?

Never by putting the nipple in the nurse's mouth.

Before adjusting the nipple, a teaspoonful may be poured from the bottle and tasted, or a few drops may be poured through the nipple upon the inner

surface of the wrist, where it should feel quite warm but never hot; or a thermometer may be placed in the water in which the bottle stands. A dairy thermometer should be used, and the temperature of the water should be between 98° and 105° F.

What is a simple contrivance for keeping the milk warm during feeding?

A small flannel bag with a draw string may be slipped over the bottle.

In what position should an infant take his bottle?

For the first two or three months it is better, except at night, when it may be undesirable to take the infant from his crib, that he be held on the nurse's arm during the feeding; later he may lie on his side in the crib provided the bottle is held by the nurse until it has been emptied; otherwise a young infant readily falls into the bad habit of alternately sucking and sleeping, and often will be an hour or more over his bottle.

How much time should be allowed for one feeding?

Usually not more than fifteen minutes. The bottle should then be taken away and not given until the next feeding time. Under no circumstances should an infant form the habit of sleeping with the nipple

in his mouth. A sleepy infant should be kept awake by gentle shaking until the food is taken, or the bottle should be removed altogether.

Should an infant be played with soon after feeding?

On no account; such a thing frequently causes vomiting and sometimes indigestion. After feeding the infant may be lifted from his crib, placed over the nurse's shoulder and patted for a moment to allow him to bring up any air that he may have swallowed. He should then be placed in his crib and allowed to lie quietly without rocking, being disturbed as little as possible either by the nurse, the parents or visitors.

GENERAL RULES FOR GUIDANCE IN THE USE OF THE FORMULAS GIVEN

It should again be emphasized that these formulas are not intended for sick children nor for those suffering from any marked symptoms of indigestion. For such infants special rules are given later.

What should be the guide in deciding upon a formula with which to begin for a child who is to be artificially fed?

The age and the weight are of importance, but the best guide is the condition of the child's digestion.

One should always begin with a weak formula, particularly (1) with all infants who have previously been entirely breast fed, as an infant who has never had cow's milk must at first have weaker proportions than the age and the weight would seem to indicate; also (2) with infants whose power of digestion is unknown. If the first formula tried is weaker than the child can digest, the food can be strengthened every three or four days until the child's capacity is reached. On the contrary, if the food is made too strong at first, an attack of indigestion will probably follow.

How should the food be increased in strength?

The first essential is that it be done very gradually; abruptly increasing the food usually causes a disturbance of digestion.

It is not wise to advance more rapidly in strengthening the food than from one formula to the next one in any of the series given, pp. 71-72; with some infants it is better to make the steps of increase only half as great as those indicated.

How rapidly should the food be increased in quantity?

The increase should not be more than a quarter of an ounce in each feeding; not oftener than every three days and usually not oftener than once a week.

When should the food be increased?

In the early weeks an increase may be necessary every few days; in the later months sometimes the same formula may be continued for two or three months. It is, however, impossible to give a definite rule as to time. One cannot say with any child that an increase is to be made every week or every two weeks. A much better guide is the condition of the digestion as shown by the child's appetite, the character of the stools, the sleep, and the general disposition.

The signs indicating that the food should be increased are, that the infant is not satisfied, not gaining in weight, but is digesting well, i.e., not vomiting, and having good stools. One should not increase the food, however, so long as the child seems perfectly satisfied and is gaining from four to six ounces a week, even though both the quantity and the strength of the food are considerably below the average; nor should the food be increased if the child is gaining from eight to ten ounces a week, even if he seems somewhat hungry. The appetite is not always a trustworthy guide. Many infants will habitually take more food than they are able to digest and it is not safe to give an infant more and more food just because he will take it. The purpose should not be to see how much food a child can be induced to take,

but to see how well he can be kept. The ultimate results of overfeeding are serious disturbances of digestion.

How can one know whether the strength or the quantity of the food should be increased?

In the early weeks it is well first to increase the strength of the food, the next time to increase the quantity, then the strength again, etc. After the fourth or fifth month, the strength, chiefly, should be increased.

If a slight disturbance or discomfort occurs after the food has been strengthened, is it best to go back to the weaker formula or to persist with the new one?

Symptoms of minor discomfort are seen for a day or two with many infants after an ordinary increase in food; but in most cases an infant soon becomes accustomed to the stronger food and is able to digest it. If, however, the symptoms of disturbance are marked, one should promptly go back to the weaker formula. The next increase should be a smaller one.

Should one be disturbed if for the first few weeks of artificial feeding the gain in weight is very slight or even if there is none?

Not as a rule. If the infant does not lose weight, is perfectly comfortable, sleeps most of the time, and

does not suffer from any symptoms of indigestion, such as colic, vomiting, etc., one may be sure that all is going well and that the infant is becoming used to his new food. As the infant's appetite improves and his digestion is stronger, the food may be increased every few days and very soon the gain in weight will come and will be continuous. If, however, the scales are watched too closely and, because there is only a slight gain in weight or none at all, the food is rapidly increased, an acute disturbance of digestion is pretty certain to follow.

Is not constipation likely to occur if the child is on a very weak food?

It is very often seen and is due simply to the small amount of residue in the intestine. But if the bowels move once a day, one should not be disturbed even though the movements are small and somewhat dry. As the food is gradually strengthened, this constipation soon passes off; while if injections, suppositories, or cathartics are used to produce freer movements, the function of the bowels is likely to be disturbed.

Under what conditions should the food be reduced?

Whenever the child becomes ill from any cause whatever, or whenever any marked symptoms of indigestion arise.

How may this be done?

If the disturbance is only a moderate one and the food has been made up for the day, one-third may be poured off from the top of each bottle just before it is given, and this quantity of food replaced by the same amount of boiled water.

If the disturbance is more severe, the food should be immediately diluted by at least one-half and at the same time the quantity given should be reduced.

For a severe acute attack of indigestion the regular food should be omitted altogether and only water given until something more is ordered by the doctor.

If the food has been reduced for a disturbance of digestion, how should one return to the original formula?

While the reduction of the food should be immediate and considerable, the increase should be very gradual. After a serious attack of acute indigestion, when beginning with milk again, it should not be made more than one-fourth the original strength, and from ten days to two weeks should pass before the child is brought back to his original food, which should be done very gradually. It is surprising how long a time is required with young infants before they completely recover from an attack of acute indigestion, even though it did not seem to be very

severe. After the digestion has once been upset, a second disturbance is produced by a much slighter cause than the first one.

REGULARITY IN FEEDING

How can a baby be taught to be regular in his habits of eating and sleeping?

By always feeding at regular intervals and putting to sleep at exactly the same time every day and evening.

When should regular training be begun?

During the first week of life.

Should a baby be wakened to be nursed or fed if sleeping quietly?

Yes, for a few days. This will not be required long, for with regular feeding an infant soon wakes regularly for his meal, almost upon the minute.

Should regularity in feeding be kept up at night as well as during the day?

With a very young infant, up to nine or ten o'clock; with older infants, only up to six o'clock; after that time they should be allowed to sleep as long as they will, and the night feeding not given unless they wake for it.

At what age may a well baby go without food from 10 P. M. to 6 or 7 A. M.

Usually at three months and sometimes even earlier. Night feeding is one of the most frequent causes of wakefulness and disturbed sleep.

WEANING FROM THE BOTTLE

When should a child be weaned from the bottle?

With children who are not ill, weaning from the bottle should invariably be begun before the end of the first year, and after a child is twelve months old the bottle should not be given except at the 10 P. M. feeding.

Is there any objection to the child's taking the bottle until he is two or three years old?

There are no advantages and some serious objections. Older children often become so attached to the bottle that only with the greatest difficulty can they be made to give it up. Frequently they will refuse all solid food, and will take nothing except from the bottle so long as it is given, and when finally, at three or four years, it is taken away, they will not drink milk during the rest of their childhood. The difficulty is here that children form the

"bottle habit." This habit is troublesome, unnecessary, and should by all means be prevented. An exclusive diet of milk for children of two or three years often results in serious anemia and malnutrition.

How should one train a child to do without the bottle?

This is usually easy if it is begun early. The milk should be poured into a tiny glass or cup and little by little the child is taught to drink or to take food from a spoon; at first only a small portion of the food is taken in this way, the balance being given from the bottle; but in a few weeks the average infant learns to drink from a cup without difficulty.

If the child has been allowed to have the bottle until two or more years old, the only effective means of weaning is through hunger. The bottle should be taken away entirely, and nothing allowed except milk from a cup until the child takes this willingly. Sometimes a child will go an entire day without food, occasionally as long as two days, but one should not be alarmed and yield. This is a matter of the child's will, not his digestion, and once he has been conquered there is seldom any further trouble. As soon as a child has learned to drink his milk from a cup,

cereals and other solid foods may gradually be added to the diet. The educational value of such training is not the least important consideration.

OVERFEEDING

What is meant by overfeeding?

Giving an infant too much food; either too much at one time or too frequently. Overfeeding, especially at night, is the most common of all mistakes in artificial feeding.

Is not an infant's natural desire for food a proper guide as to the quantity to be given?

The appetite of a perfectly normal infant usually is; but overeating is a habit gradually acquired and may continue until much more food than is proper is taken in the twenty-four hours. This habit is most frequently seen in infants whose digestion is not quite normal; because of the temporary relief from discomfort experienced by taking food into the stomach, they often appear to be hungry the greater part of the time, especially at night.

What are the causes of overfeeding?

The most common one is the habit of watching the weight too closely, and the conviction on the part

of the mother or nurse that, because a child is not so large nor gaining so rapidly as some other infant of the same age, more food or stronger food should be given.

What harm results from overfeeding?

All food taken in excess of what a child can digest becomes a burden to him. The food lies in the stomach or bowels undigested, ferments, and causes wind and colic. When overfeeding is longer continued, serious disturbances of digestion are produced. The infant is restless, fretful, constantly uncomfortable, sleeps badly, stops gaining and may even lose in weight. Such symptoms may lead to the mistaken conclusion that too little food is given, and it is accordingly increased when it should be diminished.

What are the earliest signs of overfeeding?

That an infant does not quite finish his bottle. If this happens but once in a few days it is not important; but when it occurs with almost every feeding it is a warning which should be heeded. Under no circumstances should an infant be coaxed to take more food, when he clearly does not want it. (See Loss of Appetite, p. 94.)

COMMON MISTAKES IN MILK MODIFICATION AND INFANT FEEDING

I. In formulas calling for a certain number of ounces of top-milk, the mistake is made of removing only the number of ounces needed for the formula. The proper way is to remove the amount required to secure a top-milk of the desired strength and then to take off this the number of ounces needed in the formula.

II. A rich Jersey milk is used as if it were ordinary milk. The formulas given in this book are chiefly calculated on the basis of a good average milk which contains about $3\frac{1}{2}$ or 4 per cent fat. Many persons have the idea that the richer the milk, the more rapidly the child will gain in weight, and hence the superiority of rich milk for infant feeding. While it is true that some children taking a rich milk may, for a time, gain rapidly in weight, yet sooner or later serious disturbances of digestion are nearly always produced.

III. The food is increased too rapidly, particularly after some disturbance of digestion. If, in an infant three or four months old, an attack of somewhat acute indigestion occurs, the food should seldom be given again in full strength before two or three weeks. Otherwise it generally happens that the attack of

indigestion is very much prolonged and much loss in weight occurs.

IV. When symptoms of indigestion occur, the food is not reduced quickly enough. Indigestion usually means that the organs are, for the time, unequal to the work imposed. If the food is immediately reduced by one-half, the organs of digestion soon regain their power and the disturbance is short. In every case the amount of reduction should depend upon the degree of the disturbance.

THE CHANGES IN THE FOOD REQUIRED BY SPECIAL SYMPTOMS OR CONDITIONS

LOSS OF APPETITE

What changes are to be made in the food and in the feeding when a baby gradually loses appetite so that he regularly leaves some of his food?

This is often the result of a long period of overfeeding or the use of milk too rich in fat. If in all other respects the child seems well and simply does not want his food, it should be offered at the regular hours, and made weaker rather than stronger. The bottle should be removed in fifteen or twenty minutes no matter how little food has been taken. Continued coaxing for half to three quarters of an hour and

offering the food at short intervals does not help matters. Forcing food with a spoon is still worse and only aggravates the symptoms, prolongs the disturbance and is apt to lead to vomiting. With a baby only ten or twelve months old it is often best to offer food but three times a day; but water may be given frequently.

The usual explanation of these symptoms is a mild indigestion and the surest remedy is to give the stomach for the time very little work to do. No greater mistake can be made than, because so little is taken, coaxing or forcing food at short intervals through fear lest the child may lose weight.

VOMITING

Why is it that an infant so often vomits some of his food within a few moments after finishing his bottle?

There are many causes besides the composition of the food. Usually the child is fed too often, or is given too much at a time; or the food is taken too rapidly (in four or five minutes) when the hole in the nipple is very large; or too slowly (thirty or forty minutes) when the hole is very small. In the latter case the child often swallows a great deal of air and may continue to bring up small quantities

of food until he is relieved. It may be because the child is jounced or rocked or handled after feeding.

How are these conditions to be remedied?

No vomiting baby should be fed oftener than every four hours and for some the interval should be even longer. The hole in the nipple should allow the child to get his food in ten to fifteen minutes.

After taking his bottle the child should be lifted and placed over the nurse's shoulder to allow him to get up the gas. Sometimes it is well to do this in the middle of the feeding as well as at its close. After the gas has been brought up the child should be placed in his crib and left quietly.

What are the changes in the food required by habitual vomiting, regurgitation or frequently spitting up of small quantities of food long after feedings?

In such conditions formulas from top-milk should never be used, but rather those from whole milk. Two ounces of lime water may be added to each twenty ounces of food, replacing the same amount of plain water.

In cases not improved by these changes it may be necessary to reduce the fat in the milk still further. This is especially true if the milk used is very rich.

Under these circumstances one should remove some of the cream from the top of the bottle before shaking it.

How much cream should be removed?

At first four ounces may be taken off, after which the bottle is shaken and the balance used as in the formulas from whole milk. After a few days if the symptoms improve only three ounces of cream need be removed. After a few days longer only two ounces are removed, then only one ounce and finally the child is brought back to the formulas from whole milk.

Is vomiting often increased by the sugar?

This is not likely with milk sugar if only the quantity mentioned in the formulas is used. However, the use of much cane sugar or maltose sometimes aggravates the vomiting. Therefore under these conditions the use of any of the malted foods should be carefully avoided.

What changes should be made in the quantity given at a feeding?

It is difficult to lay down an absolute rule. Usually a small quantity of a strong food is better than a large quantity of weak food. But one should not give more than is advised in the schedule for the age of

the child. To give somewhat smaller quantities is sometimes useful, but often this is of no assistance

GAS, FLATULENCE AND COLIC

What are the causes of, and food changes required by, much gas in the stomach, leading to distention and eructations (belching) of gas and often of sour food or fluid?

This is often associated with habitual vomiting and is due to similar causes. It is a symptom of indigestion. It is generally associated with gastric fermentation and is made worse by food containing high sugar or high fat; with such symptoms both should be reduced. Most of the gas in the stomach is air which has been swallowed. Air is swallowed not only when food is taken, but by many infants suffering from indigestion at other times.

What changes should be made in the food when there is habitual flatulence and colic?

Flatulence occurs when there is excessive formation of gas in the intestines or when the air swallowed passes on into the bowels. If this is readily expelled the child suffers no great discomfort; but if not, some distention of the bowel takes place and colic results.

Both these conditions are greatly aggravated by

constipation, and to relieve the constipation is often the best means of controlling them.

The gas usually arises from faulty digestion of the sugars or starchy foods, and either of these elements of the food may need to be reduced, particularly the starch, which in many cases should be omitted altogether.

CONSTIPATION

What changes should be made in the food for chronic constipation?

Nothing should be done if there is one good stool a day. Such a condition cannot be called constipation. The constipation of the first weeks of life has been already referred to (page 86); it usually disappears as the food is gradually strengthened.

Constipation is rather more frequent in infants fed upon formulas from whole milk than upon those from top-milk. When a change is made to the latter, constipation may be relieved because less milk is used in the formula, and consequently less casein, which is constipating, is given.

The chief change in the food which helps the constipation is an increase in the sugar. Milk sugar and maltose preparations are rather more laxative than cane sugar and may be substituted for it. Also the

daily amount of sugar may be increased by one or two tablespoonfuls. A reduction in the amount of milk and the addition of gruel, especially oatmeal gruel, earlier and in larger amount than usual may be helpful.

In more obstinate cases one-half or one teaspoonful of the milk of magnesia may be added to the daily food. The amount given may gradually be reduced until finally it is discontinued. To infants over four months old, fruit juice may be given; and to all constipated infants water should be given freely between feedings.

HOT WEATHER

What special modifications are required during very hot weather?

During the warm season it is well to make the proportion of fat less than during cold weather. During periods of excessive heat it should be much less. The fat is reduced by using formulas from whole milk in place of the 7-per-cent top-milk. At such times also the usual food should be diluted and water given freely between the feedings.

NO GAIN IN WEIGHT

What changes should be made in the food of a child who, with all the signs of good digestion, gains very little or not at all in weight?

If the child seems hungry the quantity of food may be increased, or the food may be made stronger by using the next higher formula of the series. If the child is not hungry it is unwise to attempt to increase either the quantity or the strength of the food; for a child thrives, not upon what he swallows but upon what he digests. Coaxing or forcing the child in order to increase the amount of food taken is almost certain to upset digestion and cause actual loss in weight.

In general, such children as we are considering do best upon milk formulas which are low in fat, i. e., those from whole milk or even from partially skimmed milk (page 96) rather than those from top-milk, and when given at the same time larger quantities of both sugar and starch than usual. The amount of flour may often be made one and one-half times or even twice that usually given. Additional sugar may be given as one of the preparations of maltose (p. 63), from one-half to two tablespoonfuls daily unless vomiting or looseness of the bowels is produced.

It is also important to look after the other factors

in the child's life—the care, sleep, fresh air and especially the amount of nervous excitement, the result of too much attention by admiring friends and relatives, for with these things rather than with the food the trouble often lies.

What should be done with infants who in spite of the usual modifications of cow's milk continue to have symptoms of discomfort or indigestion and do not thrive?

Except inmates of institutions, who form a class by themselves, most infants who receive proper care thrive upon cow's milk if the formulas are suited to the digestion. Still there are some who do not. The nutrition of such is always a matter of difficulty.

If a wet-nurse is available the employment of one is the thing most likely to succeed, particularly if the infant is under three or four months old. Complete wet-nursing may be necessary for a few weeks only; after this partial nursing is usually sufficient.

Some infants thrive upon boiled milk who seem to be unable to digest raw milk; both therefore should be tried.

Success sometimes follows a change to dried milk or condensed milk (page 110). They are more likely to agree when the symptoms are chiefly intestinal (colic, flatulence, constipation, undigested stools or

diarrhea), than when the symptoms are chiefly gastric (vomiting, regurgitation, etc.). They should not be continued indefinitely; after a period varying from a few weeks to a few months the infant should be brought back gradually to the usual milk formulas.

INDISPOSITION, INDIGESTION, ETC.

What changes in the food are required by slight indisposition?

For slight general disturbances such as dentition, colds, sore throats, etc., it is usually sufficient simply to dilute the food. If this is but for two or three feedings, it is most easily done by replacing with boiled water an ounce or two of the food removed from the bottle just before it is given; if for several days, a weaker formula should be used.

What changes should be made for a serious acute illness?

For such attacks as those of pneumonia, bronchitis, measles, etc., attended by fever, the food should be diluted and the fat reduced as described on page 96. It should be given at regular intervals, rather less frequently than in health. Water should be given freely between the feedings. Food should not be forced in the early days of an acute illness, since the

loss of appetite usually means an inability to digest much food.

What immediate changes should be made in the food when the child has an acute attack of gastric indigestion with repeated vomiting, fever, pain, etc.?

All milk should be stopped at once, and only boiled water given for ten or twelve hours; afterward barley-water or broth may be tried, but no milk for at least twenty-four hours after the vomiting has ceased. When beginning with modified milk, formulas made from skimmed milk as already described should be used for a few days. Lime-water may be added to the food.

What changes should be made for an attack of intestinal indigestion with looseness of the bowels?

For mild attacks (only two or three passages daily) the sugar should be reduced or omitted, also the fruit juice and the vegetable and for a few days the milk boiled for five minutes. If undigested milk appears in the stools, it may be diluted with an equal amount of barley water. If the diarrheal attack is more severe, and attended by fever and foul-smelling movements of greater frequency, all milk should be stopped immediately, and the diet mentioned just

above under the head of acute disturbances of the stomach should be employed.

What changes in the food should be made when the child seems to have very little appetite and yet is not ill?

The number of feedings should be reduced, the interval being lengthened by one hour or even more. No greater mistake can be made than to offer food every hour or two to an infant who is not hungry. This only prolongs and aggravates the disturbance.

What other conditions besides the food greatly influence the child's digestion?

Proper clothing, warm feet, regular habits, fresh air, clean bottles, and food given at the proper temperature, are all quite as important as the preparation of the food; quiet, peaceful surroundings and absence of all nervous excitement are also essential to good digestion. In many cases in which children suffer frequently from indigestion and do not gain properly in weight, the fault is not with the food but with the care that the child receives. Both while the food is being taken and afterwards he should be left quite alone. This is particularly necessary with nervous children.

THE ADDITION OF OTHER FOOD

What food besides the milk formula may be given during the first year?

Fruit juices, broth, beef juice, egg, strained cereal, dried bread or a milk cracker, and certain vegetables.

When and how should fruit juices be given?

With most infants they should be begun at seven or eight months; some with advantage can take them as early as five or six months. They should be begun as early as five months and given regularly to infants fed upon pasteurized or sterilized milk. At first only two or three teaspoonfuls once a day are given; the quantity may be gradually increased until the child when ten months old is taking from two to three tablespoonfuls a day. The best time is about midway between the feedings.

What fruit juices may be used?

Orange juice is probably the most convenient. The fruit should be fresh and sweet. The juice of fresh peaches, other ripe fruits or the juice of cooked fresh or canned tomatoes may be used in the same way as orange juice, but all should be carefully strained.

Of what advantage are fruit juices?

They help to keep the bowels regular, promote the general nutrition of the infant and prevent scurvy which sometimes occurs in children fed on condensed, boiled, pasteurized or sterilized milk.

How and when may beef juice be used?

With average infants it may be begun at nine or ten months; two teaspoonfuls may be given daily, diluted with the same quantity of water just before the midday feeding; in two weeks the quantity may be doubled; and in four weeks one ounce may be given. The maximum quantity at one year should not be more than two or three tablespoonfuls.

With delicate infants who are pale and anemic, beef juice is more important and it may often be wisely begun at five or six months in smaller quantities than those mentioned.

How are broths to be used?

Mutton or chicken broth may be used much like beef juice, two or three ounces at one time. It may be given on alternate days with beef juice.

How are eggs to be given?

Half of a "coddled" egg may be given at nine or ten months, the amount being gradually increased until a whole egg is given. It should of course be

salted. Egg may be given once or twice a week in place of the broth or beef juice just mentioned.

The yolk of a hard boiled egg may also be grated fine and added to the diet of a child as young as six or seven months.

It should be remembered that a few infants are very sensitive to eggs and cannot take them at all.

How soon may toast and crackers be given?

This depends somewhat on the number of teeth. The average child can nibble at a small piece of thin crisp toast when he is nine or ten months old. It should be given at feeding time and at first but once a day. Later a larger amount may be tried. Its chief value is in teaching the child to chew his food.

When and how may cereals be given?

By the ninth or tenth month well-cooked strained cereals may be given with a spoon, with some of the milk from the bottle served on them. At first one tablespoonful (gradually increased to two tablespoonsfuls) may be given once, and later twice, a day. This may take the place of a part or all of the cereal which has been given as gruel in the milk.

At what age may vegetables be begun?

With most healthy infants at eleven or twelve

months; with some they may with advantage be given at nine or ten months.

What vegetables may be used?

Green vegetables are the best, particularly spinach, next to this beet-tops, string beans, carrots, asparagus tips and very young green peas. All should be fresh, thoroughly cooked in a small amount of water and rubbed to a smooth pulp through a fine sieve.

How much and how should vegetables be given?

At first not more than one-half teaspoonful daily, given with the regular feeding; the quantity may be gradually increased up to two or three teaspoonfuls at one year. They may be given separately or cooked in soups.

Of what advantage is it to give vegetables so early?

First, they supply iron, greatly needed by the infant, and of which there is practically none in cow's milk; secondly, they supply a certain amount of residue to the stool, which is of much assistance in overcoming the constipation of infants whose diet is chiefly milk.

SUBSTITUTES FOR FRESH MILK

When no fresh cow's milk can be obtained, what substitutes are most reliable?

Dried milk; condensed milk; evaporated milk; goat's milk.

Dried milk is derived from fresh whole milk or partially skimmed milk, by different methods. It is sold under various names—klim, dryco, mammala, glaxo, etc., or simply as dried milk or milk powder. To some of these preparations sugar, usually milk sugar, has been added.

How is dried milk used?

It may be used in any strength desired, simply dissolved in water or sometimes in barley water; more sugar may be added when desired. While very useful under many conditions it is not to be recommended as a permanent food when good fresh cow's milk can be obtained.

The so-called "filled milk" should not be used for infant feeding.

What is condensed milk?

Fresh milk which has been sterilized and then some of the water evaporated until one part represents about two and a half parts of the original milk. The sweetened condensed milk usually has cane sugar

added in the proportion of about six and a half ounces to a sixteen-ounce can. Of the condensed milks available the Eagle brand in the United States, and in Europe the Bear brand of Swiss condensed milk are probably as reliable as any.

How should condensed milk be used?

For an infant one or two months old it should be diluted with boiled water or with barley water in the proportions of 1 to 12 or 1 to 10; the food is gradually strengthened by diluting with less water. Condensed milk is usually not used stronger than 1 to 5 or 1 to 6. The intervals between feedings and the quantities for one feeding are given on page 75.

How long should condensed milk be continued?

In most cases it should be used as the sole food for a month or two only. Afterward, one feeding a day of a weak formula of modified milk (e. g., No. II or III Whole Milk Series, page 71) may be given; later two feedings, and thus gradually the number of modified milk feedings is increased until the child is taking only modified milk.

What are the disadvantages of condensed milk?

It contains too high a proportion of sugar and too little fat and protein. Children reared upon condensed milk often gain rapidly in weight and are

very fat, but as a rule they are flabby, have but little resistance, and are very prone to develop rickets and sometimes scurvy. It is not to be recommended as a permanent food when good fresh cow's milk can be obtained; and it is distinctly inferior to dried milk.

What is evaporated milk?

It resembles condensed milk but has no cane sugar added; it is sold fresh and sterilized in cans. It is about the same strength and requires the same dilution as the usual condensed milk. The evaporated milk requires the same addition of carbohydrates (sugar and starch) as does plain milk. The total amount of sugar added should be about one ounce to twenty ounces of the food prepared. The sugar may be milk sugar, maltose or cane sugar, often advantageously some of each. The starch may be given in the form of barley, wheat, or oat gruel, not more than eight or ten ounces in the daily food. Evaporated milk is to be preferred for infant feeding to the sweetened condensed milk when it must be continued for any considerable time; the objections to the large amount of cane sugar are thus avoided.

Is dried milk, evaporated milk or condensed milk more easily digested than plain modified milk or pasteurized milk, and when are they to be used?

By some delicate infants with feeble digestion these preparations appear to be; they may be tried in the order named when persistent symptoms of indigestion occur with other forms of milk.

All these substitutes are convenient for traveling and often necessary for use in foreign countries, but not to be advised as permanent infant foods where fresh cow's milk can be obtained; they are, however, to be preferred to the prepared infant foods.

Does goat's milk possess any special advantages?

It may be had in many foreign countries where it is impossible to obtain any fresh cow's milk. When fresh and produced under cleanly conditions it is to be preferred as a permanent food to any of the substitutes above mentioned. For most infants goat's milk requires the same modification as cow's milk. It appears to have no special advantage over cow's milk as an infant food.

STERILIZED MILK, BOILED MILK, PASTEURIZED MILK

What is meant by sterilizing milk?

Heating, to destroy the germs it contains.

Does all cow's milk contain germs?

Yes; even when handled most carefully, milk contains many germs; but when carelessly handled, and

in summer, the number is enormous. While most of these are harmless or cause only the souring of milk, others are occasionally present which may produce serious diseases, such as typhoid fever, diphtheria, scarlet fever, septic sore throat, tuberculosis, and some forms of diarrhea.

Under what circumstances is it necessary to sterilize milk?

1. In warm weather, when it cannot be obtained fresh; hence always in cities and towns during the summer.
2. When one cannot be certain that the cows are healthy, or that the milk has been carefully handled.
3. When the milk is to be kept for any considerable time (i. e., over twenty-four hours), especially if no ice can be had.
4. During epidemics of typhoid or scarlet fever, sore throat, or dysentery.

What are the two methods of heating milk?

The first is known as *sterilizing*, in which the milk was at first heated to 212° F. for one hour or one hour and a half. Now it is usually sterilized by boiling for ten minutes. The second method is known as *pasteurizing*, in which the milk is usually heated to 155° or 160° F. for thirty minutes. A

temperature of 155° F. continued for thirty minutes is sufficient to kill the germs of the diseases above referred to.

Will milk which has been thus treated keep indefinitely?

No; for although all the living germs may be killed, there are many undeveloped germs, or spores, which are not destroyed, and which soon grow into living germs. Milk heated to 212° F. for an hour will often keep upon ice for two or three weeks; that heated to 155° F. should be used within 24 hours.

Is milk which has been sterilized always a safe food?

No; for the reason that the milk may be so old, so dirty, and so contaminated before sterilizing that it may be still unfit for infant feeding, though it contains no living germs.

Is cow's milk rendered more digestible by being heated in this way?

For most infants, sterilizing milk does not improve its digestibility, but there are some who certainly do better for a time upon boiled or sterilized milk. If an infant is not doing well upon raw milk,

boiled milk may be used. Sterilized milk should be modified for infant feeding in the same way as milk which has not been heated.

Is milk in any way injured by heating to 212° F.?

Milk is rendered more constipating and certain of its nutritive properties are injured, especially the vitamin which prevents scurvy, so that this disease may develop if such milk is continued as the sole food for a long period. Some other food which prevents scurvy (p. 217) should then always be given with it. The disadvantages as well as the advantages of sterilizing milk should be recognized and understood.

When is it advantageous to heat milk to 212° F.?

For use on long journeys, such as crossing the ocean. Milk should then be heated for one hour upon two successive days, without removing the stoppers from the bottles.

Is milk in any way injured by heating at 155° F. for thirty minutes?

The unfavorable effects are less than when higher temperatures and longer periods are used as in sterilizing milk. But there is still a risk of scurvy when pasteurized milk is used for long periods either

as the sole food or with the addition only of sugar and gruel.

The advantages of pasteurized milk are very great and one should not be deterred from using it for prolonged periods, but should be aware of the fact that this is attended with a danger of scurvy if continued for more than a few months, without the addition of some food which prevents scurvy. The preference in infant feeding should however be given to milk which is so clean and so fresh as not to require any heating; but only the cleanest and freshest milk can be given raw, certainly during warm weather.

How may milk be sterilized?

No special form of apparatus is required. It should be boiled for ten minutes in the bottles from which it is to be fed; then rapidly cooled and placed on ice.

How may milk be pasteurized?

A convenient form of apparatus is the Freeman pasteurizer¹; another is the Walker-Gordon pasteurizer.² Other good ones are sold in the stores.

¹ This can be obtained at 411 West Fifty-ninth Street, New York, with bottles and full directions.

² Obtained from any of the Walker-Gordon milk laboratories,

How should milk be cooled after pasteurizing?

Always by placing the bottles in cold water, so as to cool them rapidly; never by letting them stand at the temperature of the room, or by placing them, when warm, in an ice box.

Why is this precaution necessary?

Cooling in the air or in an ice box requires from two to four hours, and during that time a great many of the undeveloped germs may mature and greatly injure the keeping properties of the milk. In the cold water, milk can be cooled in from ten to twenty minutes if the water is frequently changed, or if ice is added to the water.

Is it better to rely upon the pasteurization of milk at home, or to purchase that which has been pasteurized before delivery?

The home pasteurization is by all means to be preferred. Considerable danger may lurk in commercially pasteurized milk because of the false sense of security. For safety several things are necessary: The milk should be reasonably clean before pasteurization; the apparatus, the bottles, or other utensils containing milk should be carefully sterilized, and the whole process carried on with the most scrupulous care and cleanliness. Since pasteurization kills

chiefly the bacteria which cause milk to sour, other germs, the spores of which are not killed by such heating, may develop rapidly unless the milk is kept cold, and though it may not turn sour, it may contain immense numbers of germs when it is delivered or used. It should be kept carefully iced, and used within twenty-four hours after heating.

MODIFIED MILK OF THE MILK LABORATORIES

What is "modified milk" of the milk laboratories?

It is milk containing definite proportions of the fat, sugar, protein, etc., put up usually according to the prescription of a physician, who indicates how much of the different elements he desires.

This is an excellent method of having milk prepared, since it can be done with greater care and cleanliness than are possible in most homes. It is, besides, a great convenience, if circumstances make it impossible to prepare the milk properly at home.

The laboratory should be used for infant feeding only by one who is somewhat familiar with this method of ordering milk.

FROZEN MILK

Is milk in any way injured for infant feeding by having been frozen?

Only the water of the milk freezes. The formation of a little ice in the milk is of no importance; but when milk which has been frozen almost solid is thawed and later heated for use, a separation of the fat sometimes takes place so that it appears like oil at the top of the bottle. Healthy infants are not affected by such milk; but very delicate infants are sometimes upset by it, and acute diarrhea may even be excited. During the few days of such extremely cold weather that it is impossible to transport milk without freezing, dried or condensed milk may be substituted for such infants.

BUTTERMILK

What are the advantages of buttermilk in infant feeding?

Chiefly that the fat has been removed, this element being the one with which many children have difficulty; there are, besides, some changes in the sugar and protein, due to the slight fermentation which takes place in the souring of the milk.

When is buttermilk to be employed?

It is useful in many cases of severe chronic indigestion and in some cases of acute indigestion.

How is it prepared and fed?

Fresh buttermilk may be purchased at many dairies; or sterilized skimmed milk may be fermented by various ferments sold in tablet form, such as "lactone," "bulgara," etc.; or a specially prepared buttermilk may be purchased from one of the milk laboratories known as "lactic acid milk," or elsewhere under a great variety of other names. It may be fed as prepared, or diluted with water or barley gruel and sugar added.

PROTEIN MILK OR CASEIN MILK*What is protein milk?*

This term has been given to a form of modified milk known in Germany as *Eiweiss Milch*, in which much of the milk sugar has been removed and the casein increased.

When is this useful?

Chiefly in cases of indigestion, acute or chronic, accompanied by diarrhea.

How is protein milk prepared?

One quart of whole milk warmed to blood heat is coagulated by rennet (see page 134), the whey is then strained off through cheese cloth and thrown

away. The dry curd is carefully rubbed through a fine wire sieve with the gradual addition of one pint of buttermilk. Enough water is then added to bring the whole up to one quart.

How is it fed?

For older infants it is given as prepared above; for younger and more delicate ones it is at first diluted with one half its volume of water. On account of its peculiar taste some infants do not readily take it; the addition of a one-grain tablet of saccharin to the quart makes it much more palatable. Protein milk may be given alone for two or three weeks, or until the symptoms improve; then maltose or cane sugar is slowly added; later, formulas from whole milk.

How is the butter-flour-milk mixture prepared?

Three even tablespoonfuls of butter are heated in a saucepan over a slow fire until foaming ceases, usually about five minutes. To this is added two and one-half ounces by measure (five even tablespoonfuls) of wheat flour and the whole heated with constant stirring for four or five minutes until the mass becomes thin and turns a brown color. Then twenty ounces warm water and two even tablespoonfuls granulated sugar are added and the whole cooked twenty minutes with stirring; if lumpy it is strained

through a fine sieve; then ten ounces of whole milk are added and the amount needed for the different feedings put in separate bottles, cooled and placed on ice.

How is this to be used?

For small infants or those below two months of age it is given as prepared, but in somewhat smaller amounts than the milk formulas given on pp. 71 and 72. For older and larger infants the amount of milk added is increased gradually from ten ounces up to a total of fifteen ounces, the formula in other respects being the same. It is especially useful for young infants who without vomiting or diarrhea do not gain on the usual milk modifications. It may be continued for several months.

FEEDING DURING THE SECOND YEAR

If the general directions given in previous pages have been followed, the infant will usually be taking at eleven or twelve months five meals, at four-hour intervals, seven or eight ounces at a time. Of this, about three fourths should be milk and one fourth thick cereal gruel, or part of the cereal is given separately with a spoon. Besides this, he will probably be receiving each day one or two ounces of orange juice,

one ounce of beef juice or three or four ounces of vegetable soup and three or four teaspoonfuls of some fresh vegetable.

How many meals are required in the second year?

Usually five meals up to fifteen months; after that four meals a day, although many children do better after eighteen months when but three meals are given. With any of these schedules the principal meals should be but three; the other one or two being milk only.

The essential thing is the amount of food given daily. Exactly into how many parts this is divided is much less important.

How should the milk be prepared after the first year?

Usually whole milk only will now be used. The quantities needed for the different feedings should be put into separate bottles, which then may be pasteurized or not as may be necessary. In this way the different feedings are kept separate, and the day's supply of milk is not disturbed every time the child is fed, as otherwise is almost unavoidable.

The amount of milk needed for the different feedings should be put into separate bottles as soon as possible after the daily milk supply is delivered. Gruel when desired may be added at feeding time.

What other changes may be made at the beginning of the second year?

No modification of the milk is necessary. The bottle should be omitted except at 10 P. M. and the milk given from a cup or spoon.

What is a proper diet for an average healthy child of from twelve to fifteen months?

- 6:30 A. M. Milk, six or seven ounces, with two or three ounces of thick barley or oat gruel. Given from cup or spoon.
8:30 A. M. Orange juice, one or two ounces.
10 A. M. Cereal, two to four tablespoonfuls;
Milk, eight ounces; some of this on the cereal.
Crisp toast or zwieback, one piece.
2 P. M. Beef juice, one or two ounces; or, one soft egg;
or cup (4 ounces) mutton or chicken soup
with vegetables.
Green vegetable, one level tablespoonful.
Milk, four or five ounces.
Crisp toast, one piece.
6 P. M. Same as at 10 A. M.
10 P. M. Same as at 6:30 A. M. except this may be given
from a bottle.

What changes may now be made in the feeding?

The gruel may be omitted from the milk, all the cereal given with a spoon and the 10 P. M. feeding discontinued.

May any other fruit juices be given at this period?

Orange juice is the best; next to this, the juice of fresh ripe peaches, red raspberries, or strawberries.

All these should be carefully strained to make sure that the child gets none of the pulp or seeds, either of which may cause serious disturbance. Of the orange or peach juice, from one to four tablespoonfuls may be allowed, at one time; of the others about half the quantity. The fruit juice is best given about one hour before the second feeding.

What is a proper diet for an average healthy child from the fifteenth to the twentieth month?

Cereals may now form a more important part of the diet. The best for this age are oatmeal, rice, cream of wheat and farina. The first two should be cooked for five hours, the last two for one hour. Cereals should be strained if they contain many husks or if the bowels are inclined to looseness.

The daily schedule should be about as follows:

- | | |
|------------------|--|
| 6:30 to 7 A. M. | Warm milk, six to nine ounces, given from a cup. |
| 9 A. M. | Fruit juice, two or three ounces. |
| 9:30 to 10 A. M. | Cereal, three or four good tablespoonfuls; upon this one ounce of thin cream or top-milk, or two ounces of milk, plenty of salt, no sugar. |
| | Crisp toast or dried bread, one small piece, with a little butter. |
| | Warm milk, six to eight ounces, from a cup. |
| 2 P. M. | Beef juice, two ounces, or one soft egg; small baked potato; one tablespoonful green vegetable; or, mutton or chicken broth, four ounces; or (if most of the teeth are present) rare |

scraped beef, at first one teaspoonful, gradually increased to three; two tablespoonfuls rice cooked four hours and one tablespoonful green vegetable.

Crisp dried bread and butter, one slice. If inclined to constipation, one or two tablespoonfuls of strained applesauce may be added.

Water. (No milk.)

6 P. M. Cereal, three or four good tablespoonfuls, served as at 10 A. M.
Milk, eight to ten ounces.

No more bottles should be allowed. The night (10 P. M.) feeding may now be omitted altogether. Most children can readily be trained to go from 6 P. M. to 6:30 or 7 A. M. without food, and sleep better than when fed at ten o'clock.

What is a proper diet for an average healthy child from the twentieth month to the end of the second year?

The same order of meals as for the months just preceding should be followed.

The daily schedule should be about as follows:

6:30 to 7 A. M. Warm milk, six to nine ounces, given from a cup.

9 A. M. Fruit juice, two to three ounces.

10 A. M. Cereal, three good tablespoonfuls, cooked and served as described in the previous diet.

Crisp toast or dried bread with butter. Warm milk, eight to ten ounces.

2 P. M. Beef juice, two ounces; and one soft egg; or, broth, four ounces; and chicken, rare scraped beefsteak, lamb chop or roast beef, one level tablespoonful.

Small baked potato with butter; or two tablespoonfuls rice.

Vegetable, one good tablespoonful, well cooked and strained—peas, string beans, carrots, spinach, celery.

Stewed fruit or baked apple, strained, one or two tablespoonfuls.

Crisp toast or dried bread, one piece, with butter.

Water. (No milk.)

6 P. M. Cereal, as above described, three tablespoonfuls.

Warm milk, eight or ten ounces; or, bread and milk—stale bread, three days old.

Instead of the hours mentioned for the different meals in this diet and the preceding one, it is sometimes more convenient to give the fruit juice at 6:30 A. M. or on waking; the cereal, etc., at 7:30 and the milk at 10:30. Or this milk is omitted entirely and but three feedings given. More milk is then given at breakfast and supper and a small amount at dinner. With most children this arrangement answers quite as well.

What fruits may be given at this period?

If the child has a feeble digestion, only the fruit juices previously allowed; stronger children may have in addition prune pulp, baked apples, or applesauce; from one to two tablespoonfuls, strained, may be given at one time.

How should broths be prepared for this age?

In the clear broth (p. 134) should be cooked vegetables (carrots, beans, peas, celery) and some cereal (rice or barley); these should be strained out before feeding.

How and when should water be given?

Throughout the second year water should be given freely between the feedings, especially in warm weather, one or two ounces several times a day. The water should be boiled daily and then cooled. It should not be allowed to stand in the room, but fresh water should be put into the bottle each time.

FEEDING DURING THE THIRD YEAR

What changes may be made in the diet during the third year?

Three regular meals should be given and usually milk once besides, either between the breakfast and dinner or dinner and supper, whichever is the longer interval. Water should be allowed freely between meals.

What would be a proper schedule for an average child during the third year?

Orange juice on waking.

7:30 A. M. Cereal: three good tablespoonfuls; cooked preferably overnight or for three hours; a somewhat larger variety may be given than during the second year; served as described in the previous diets; the addition of one-half teaspoonful of sugar may be permitted.

Warm milk, eight or ten ounces.

A soft egg, poached, boiled or coddled.

Bread (very stale or dried), one slice, with butter.

- 10:30 A. M. Warm milk, one cup (six ounces), with a milk cracker or piece of very stale bread with butter.
- 2 P. M. Beef juice, two ounces; or, broth or vegetable soup, four ounces.
Meat: one tablespoonful of lamb chop, beefsteak, or chicken.
Potato, one small baked or two tablespoonfuls of mashed; or, boiled rice, two tablespoonfuls.
Vegetable: one good tablespoonful, spinach, string beans, fresh peas, carrots, asparagus; put through a fine sieve.
Dessert: strained, cooked fruit, junket or custard.
Bread, dried, or crisp toast, one thin slice with butter.
Water. (No milk.)
- 6 P. M. Cereal: three good tablespoonfuls of farina, corn meal or cream of wheat, cooked for at least one hour; served as in the morning meal; and ten ounces of milk;
or, bread and milk;
or, stale or dried bread with butter and a glass of milk.

Instead of the hours mentioned, the milk at 10:30 may be omitted and only the three regular meals given. The hours would then be 8 A. M., 1 P. M. and 6 P. M., and only water given between these meals. Orange juice may be given on waking, about one hour before the breakfast.

GENERAL RULES TO BE OBSERVED IN FEEDING

Bad habits of eating are readily acquired but difficult to break.

Young children should not be allowed to play with their food, nor should the habit be formed of amusing or diverting them while eating, in order to make them take more food.

Children should not be permitted to make an entire

meal of one thing, no matter how proper this may be.

Children who are allowed to have their own way in matters of eating are very likely to be badly trained in other respects; while those who have been properly trained in their eating can usually be easily trained to do anything else that is important.

Learning to eat proper food in a proper way forms, therefore, a large part of a child's early education. If careful training in these matters is begun at the outset and continued, the results will well repay the time and effort required.

Whether the child feeds himself or is fed by the nurse, the following rules should be observed:

1. Food at regular hours only; nothing between meals.
2. Plenty of time should be taken. On no account should the child bolt his food.
3. The child must be taught to chew his food. Yet no matter how much pains are taken in this respect, mastication is very imperfectly done by all children; hence for little children, all meats should be scraped or very finely cut, all vegetables should be rubbed through a sieve and all cereals cooked very thoroughly.
4. Children should not be continually urged to eat if they are disinclined to do so at their regular hours of feeding, or if the appetite is habitually poor, and under no circumstances should a child be forced to eat.

5. Indigestible food should never be given to tempt the appetite when the ordinary simple food is refused; food should not be allowed between meals when it is refused at meal-time.

6. One serious objection to giving highly seasoned food, entrées, jellies, pastry, sweets, etc., even in such small amounts as not to upset the digestion, is that children thus indulged soon lose appetite for the simple food which previously was taken with relish.

7. If an infant refuses his food altogether, or takes less than usual, the food should be examined to see if this is right. Then the mouth should be inspected to see if it is sore. If neither of these things is the case, the food should be taken away and not offered again until the next feeding time comes.

8. In any acute illness the amount of food should be much reduced and the food made more dilute than usual. If the child is already upon a milk diet, this should be diluted.

9. In very hot weather the same rules hold — to give less food, particularly less solid food, and more water.

FOOD FORMULAS

Beef Juice.—One pound of rare round steak, cut thick, slightly broiled, and the juice pressed out by a lemon-squeezer, or, better, a meat-press. From two

to four ounces of juice can generally be obtained. This, seasoned with salt, may be given cold, or warmed by placing the cup which holds it in warm water. It should not be heated sufficiently to coagulate the albumin which is in solution, and which then appears as flakes of meat floating in the juice.

Beef Juice by the Cold Process.—One pound of finely chopped round steak, six ounces of cold water, a pinch of salt; place in a covered jar and stand on ice or in a cold place, five or six hours or over night. It is well to shake occasionally. This is now strained and all the juice squeezed out by placing the meat in coarse muslin and twisting it very hard. It is then seasoned and fed like the above.

Beef juice so made is not quite as palatable as that prepared from broiled steak, but it is quite as nutritious and is more economical, as fully twice as much juice can be obtained from a given quantity of meat. Beef juice prepared in either of these ways is to be preferred to the beef extracts sold.

Mutton Broth.—One pound of finely chopped lean mutton, including some of the bone, one pint of cold water, pinch of salt. Cook for three hours over a slow fire down to half a pint, adding water if necessary; strain through muslin, and when cold carefully remove the fat, adding more salt if required. It may be fed warm, or cold in the form of a jelly.

A very nutritious and delicious broth is made by thickening this with cornstarch or arrowroot, cooking for ten minutes and then adding three ounces of milk, or one ounce of thin cream, to a half pint of broth.

Chicken, Veal and Beef Broths.—These are made and used in precisely the same manner as mutton broth.

Scraped Beef or Meat Pulp.—A piece of rare round or sirloin steak, the outer part having been cut away, is scraped or shredded with a knife; from one half to one tablespoonful may be given, well salted, to a child of eighteen months. Scraping is much better than cutting the meat fine.

For this on a large scale, as in institutions, a Hamburg-steak cutter may be employed.

Junket, or Curds and Whey.—One pint of fresh cow's milk, warmed to blood heat; pinch of salt; one-half tablespoonful of granulated sugar; add two teaspoonfuls of Fairchild's essence of pepsin, or liquid rennet, or one-half of a junket tablet dissolved in water; stir for a moment, and then allow it to stand at the temperature of the room for twenty minutes, or until firmly coagulated; place in the ice box until thoroughly cold. For older children this may be seasoned with grated nutmeg.

Curd.—The dry curd, after all the whey has been

drained off or removed by squeezing, with the addition of a little salt is palatable and often useful in cases of diarrhea. One round tablespoonful may be given to older children three or four times a day either plain or spread on thin toast. It should not be used for this condition unless freshly made. No sugar should be added before coagulation.

Whey.—The coagulated milk prepared as above, is broken up with a fork and the whey strained off through muslin. If some stimulant is desired, a little sherry wine may be added. Whey is useful in many cases of acute indigestion with vomiting, but not generally in diarrhea.

Barley Water.—One level tablespoonful of barley flour is thoroughly blended with a little cold water and added, stirring, to ten ounces of boiling water containing a pinch of salt. This is cooked for twenty minutes in a double boiler and then strained. Enough water should then be added to bring the whole up to sixteen ounces.

Barley Gruel or Barley Jelly.—This is made in the same manner as the above, but from two to four level tablespoonfuls of the flour are used, according to the thickness of the gruel desired.

Either barley water or barley jelly may be made from the grains. For barley water, use one heaping tablespoonful of pearl barley which has been soaked

four or five hours, or overnight, sixteen ounces of water, a pinch of salt. This is boiled steadily for four hours, adding water from time to time to keep the quantity up to sixteen ounces. It is then strained through muslin.

For barley gruel or barley jelly use from two to four tablespoonfuls of pearl barley.

Rice, Wheat or Oat Water.—These are made from rice, wheat, or oat flour exactly as barley water, above described. Like the barley water they may also be made from the grains, using the same proportions.

Gruel or Jelly from Rice, Wheat, or Oats.—These are made from the flours or grains as has been described for barley gruel.

For the wheat preparations, ordinary wheat flour or wheaten grits may be used.

For the rice preparations the ordinary rice grains or rice flour may be used.

For the oat preparations, either oat flour or any of the commonly employed forms of oatmeal may be used.

When any of these farinaceous foods are to be mixed with milk, the milk should be added directly after removing the gruel from the fire, and stirred two or three minutes.

Albumin Water.—The white of one fresh egg; eight ounces of cold water; pinch of salt; teaspoonful of

brandy. This should be shaken thoroughly and fed cold either with a spoon or from a bottle. It is useful in cases of vomiting, and can sometimes be retained by a very irritable stomach.

Dried Bread.—Either stale or fresh bread (that from whole wheat preferred), may be used; it is cut in thin slices and placed on top of the stove or in the oven with the door open, and quickly dried until it is crisp, but not browned. It is in many respects preferable to crackers for little children.

Coddled Egg.—A fresh egg, shell on, is placed in boiling water which is immediately after removed from the fire. The egg then cooks slowly in the water, which gradually cools, for seven or eight minutes, when the white should be about the consistency of jelly. For a delicate digestion the white only should be given, with salt; it can be easily separated from the yolk.

Fruit Pulp.—Dried prunes should be stewed with little or no sugar until they are very soft, all skins being removed, and then the fruit put through a fine strainer; from one to four tablespoonfuls may be given at one time. Apricots, apples or peaches may be prepared in the same way.



P A R T I I I
OLDER CHILDREN



III

GROWTH AND NUTRITION

Is it important to watch and record the growth of older children?

Yes, for nothing else shows so well that a child is making normal progress as his rate of gain in height and weight. In infancy progress is noted by weeks; in later childhood, by months. A regular gain in weight and height in an older child is as much a sign of health as in an infant.

Is there a standard weight for children at the different ages?

There is not; both in weight and height healthy children of the same age vary a good deal; they are much modified by race and by family inheritance.

Is there a standard weight for children of the same height?

Yes, approximately; this varies so little in children of different families and different European races that it may be taken as a general guide to the child's nutrition.

The *standard* weight for height is given on page 143. The *normal* includes a wider range.

Age, however, is a factor which cannot be ignored. Of two children having the same height but of different ages, the older child should weigh more than the younger one.

How wide a variation from the average may be regarded as normal, that is, within the range of health?

There is no absolute line that can be fixed. It is generally accepted that for practical purposes any child who is 10 per cent or more below, or 20 per cent or more above the average for his height and age is not normal as to his nutrition.

There are also many children who are less than 10 per cent below standard weight for height and age who are not normal and are in need of attention.

The child who is habitually much below the averages noted may be thin because of inheritance, but frequently because he is abnormally active. All such children should have a complete medical examination at least twice a year and be closely watched to see that they keep well. They are very likely to develop nervous symptoms or more serious disease.

Is every child who has a proper weight for his height to be considered normal?

There are some children who are stunted in growth by causes which also affect their weight. Though

they may weigh enough for their height they may be so much below standard in both that they cannot be classed as normal.

STANDARD WEIGHT FOR HEIGHT

Height	Boys	Girls
42 inches	40.5 lbs.	39.5 lbs.
43 "	42.5 "	41.5 "
44 "	44.5 "	43.5 "
45 "	46.5 "	45.5 "
46 "	48.5 "	48. "
47 "	51. "	50.5 "
48 "	53.5 "	53. "
49 "	56. "	55.5 "
50 "	58.5 "	58. "
51 "	61.5 "	61.5 "
52 "	64.5 "	64.5 "
53 "	67.5 "	67.5 "
54 "	71. "	71. "
55 "	74.5 "	74.5 "
56 "	78. "	78.5 "
57 "	82. "	83. "
58 "	86. "	87.5 "
59 "	90. "	92.5 "
60 "	94. "	99. "
61 "	98. "	105. "
62 "	103. "	111. "
63 "	108. "	115. "
64 "	114. "	119. "
65 "	120. "	123. "
66 "	126. "	126.5 "
67 "	132. "	130. "

Weights are taken in usual indoor clothes without shoes; boys with coats and sweaters removed; heights are without shoes.

Are children who are above standard weight for height to be considered normal?

If they are very much above standard weight for height (20 per cent or more), they can hardly be classed as normal. Overweight, though perhaps not so serious as underweight, is still important and should not be ignored.

What else besides being much below weight for height shows that a child is undernourished?

The fact that he does not make the normal gain in weight. This is even more important than being at any time below weight for height.

AVERAGE ANNUAL GAIN

Boys			Girls		
Age	Weight	Height	Age	Weight	Height
5 to 6 yrs.	4 lbs.	2 in.	5 to 6 yrs.	4 lbs.	2 in.
6 to 7 "	4.5 "	2 "	6 to 7 "	4.5 "	2 "
7 to 8 "	4.5 "	2 "	7 to 8 "	5 "	2 "
8 to 9 "	5 "	2 "	8 to 9 "	5 "	1.7 "
9 to 10 "	6 "	2 "	9 to 10 "	6 "	2.2 "
10 to 11 "	5 "	1.7 "	10 to 11 "	7 "	2 "
11 to 12 "	6.5 "	1.8 "	11 to 12 "	9.5 "	2.5 "
12 to 13 "	8 "	2 "	12 to 13 "	11.5 "	2 "
13 to 14 "	10.5 "	2.5 "	13 to 14 "	10 "	2 "
14 to 15 "	12.5 "	2.7 "	14 to 15 "	6 "	1.2 "
15 to 16 "	12.5 "	2.7 "	15 to 16 "	5 "	.75 "
16 to 17 "	6.5 "	1.2 "	16 to 17 "	2 "	.50 "
17 to 18 "	5 "	.5 "	17 to 18 "	1 "	.20 "

Should one be concerned about a child who does not make a regular gain in weight?

Growing children should be weighed regularly,

usually once a month; but the monthly gain is rarely regular throughout the year. Sometimes for two or three months there may be little or no gain in children who are quite well; but this is apt to be followed by a period of very rapid gain. This is often seen in the fall.

A prolonged stationary weight or a steady loss in weight at any time demands attention. The annual rate of gain with healthy children is fairly uniform. The average for both sexes is given on page 144.

What should be done if a child is not gaining as he should?

He should first be examined by a physician to see whether he is suffering from any disease or defect which retards growth, and then his whole daily routine should be carefully investigated to see what is wrong.

What are the common causes of a child's being continually underweight?

It may be constitutional, a condition inherited from delicate parents; but more often there are other causes: e. g.,

- (1) The food, which is insufficient in amount or improper for a child of his age.
- (2) Bad food habits — eating too rapidly, not chewing food properly, eating irregularly and between meals.

(3) Excessive activity—too much hard play or hard work.

(4) Late hours, too little rest and sleep, often resulting in excessive nervousness.

(5) Some defect like bad teeth, enlarged tonsils or adenoids.

(6) The beginning of some serious disease such as tuberculosis, heart disease, etc.

Any of these causes if discovered must be removed before improvement can be expected.

What are the causes of children being overweight?

With some it is a matter chiefly of inheritance; with many it is the result of too little active exercise and eating too much, especially of things which are fattening, such as sweets, cereals, potato, bread and butter, cream and eggs and too little fruit and green vegetables.

How are conditions like those mentioned to be prevented from affecting the child's nutrition?

The important thing is that they should be recognized and corrected as early as possible.

How can one make sure of early recognition?

Every child should be weighed regularly each month, as the easiest means of detecting early what

is wrong; a full medical examination should be made twice a year during the period of active growth.

Where should these observations upon growth be made?

As they are not likely to be made regularly in the home by the family physician, they should be made a part of the regular work of the school. Reports of the result of the health examination and progress should be sent to the parents with the report of the school work; and records of the child's weight, height and health should be kept at the school just as are the records of his progress in his studies.

What symptoms are commonly seen in children suffering from malnutrition, that is, those who are habitually much below normal weight?

Most of them are nervous; they tire easily; they sleep poorly; they may be irritable and tears come readily; they are often very active and find it almost impossible to sit still; in school they are inattentive and find concentration on lessons difficult; the appetite is apt to be capricious; they frequently suffer from chronic constipation, often they are pale and anemic.

Is this condition of malnutrition or undernourishment an important matter?

It is very important, if boys and girls are to grow up into strong men and women. Those who are responsible for their care during the period of growth should see to it that their nutrition is kept up to the normal standard. Besides, it is very difficult for a child who is habitually undernourished to do well the usual work of the school. Again, malnutrition often lays the foundation for some serious disease such as tuberculosis. All children who are much under weight or who do not gain normally should be closely watched.

How is malnutrition to be prevented or corrected?

The first essential is to see that the common rules of health are obeyed: proper food in sufficient amount; sufficient hours of sleep; fresh air and proper exercise. Education in these matters must be given not only to parents but to children themselves. The health authorities, the school and the home should all coöperate to this end.

What sort of a routine should be adopted for a child of ten or twelve who is much undernourished?

The amount of work required in school should be reduced.

The hours of active exercise or play should be shortened.

There should be a rest period both in the forenoon and the afternoon.

A small feeding, usually milk, should be given between the regular meals, just before the rest period.

The hours in bed should be lengthened; the bedtime being not later than 7:00 P. M.

There should be plenty of fresh air not only at night but during the rest periods of the day.

The diet should consist only of the simplest food; no fancy articles; no sweets between meals.

The child should be taught to eat slowly and chew his food well.

The weight should be taken every week.

TRAINING IN HEALTH HABITS

Training in health habits is one of the most important parts of the child's education. This training should be begun early, even in infancy, and kept up faithfully throughout childhood, so that the routine becomes established as a part of the child's daily life; for on it depends in no small degree his comfort, health, growth and happiness.

What are the essential health habits in which all children should be trained?

I. Habits of eating.

1. Eating a variety of food, not making an entire meal of one or two articles.
2. Eating food proper for children — not food of their own choosing.
4. Eating slowly and chewing thoroughly, not bolting food and washing it down with water; and never drinking with the mouth full of food.
4. Eating at regular hours only.

II. Drinking water several times a day at regular intervals.**III. Cleanliness.**

1. A full bath at least twice a week.
2. Clean hands and face.
3. Hands always washed before eating and after going to the toilet.

IV. Brushing the teeth, always before going to bed; if possible in the morning also.**V. Regular bowel movements, preferably in the morning after breakfast.****VI. A mid-day rest, to be continued with all children at least to school age.****VII. An early bed hour, to secure necessary sleep: e. g., eleven hours for a child of ten years.**

- VIII. Plenty of fresh air, the windows always open at night.
- IX. Out-of-door exercise and play every day.
- X. Covering the mouth and nose when coughing or sneezing.

Where should these habits be taught?

The home is the proper place; if not in the home, they should be taught in all schools, beginning with the primary grades. They can often be taught more successfully in school to groups than to a single child, since the spirit of competition may be roused which gives an added interest.

How may children be taught to chew their food?

Not by giving only liquid food or solid food which has been put through a fine sieve, but by giving hard dry crackers, zwieback, crisp toast, etc.

When may a child be taught to feed himself?

One may begin at two years with cereal or potato; at three years most children can be taught to feed themselves almost entirely. To feed any child habitually after four years is a great mistake.

What harm does it do?

The practice is usually begun because the appetite

is not keen and the child takes so little of his own accord, and perhaps spends an hour or more playing with his food. In despair the mother or nurse feeds the child and endeavors by coaxing or even forcing him to take more food than he wants. The final result is that the child has less and less desire for food and may even have attacks of vomiting when it is given.

How should such children be managed?

The common practice of telling stories, "feeding the bird," playing the music box and all similar devices used to divert a child and feed him unawares, are unnecessary and even harmful in that they tend to perpetuate the bad habit sometimes for years.

Food should be given at the regular hours and in fifteen or twenty minutes taken away even though none has been eaten, and nothing more offered until the next regular meal hour. It is much better not to say a word to the child about eating. The habit of continued coaxing for half an hour or an hour only makes matters worse.

Is not a child likely to suffer harm from going without food?

A child, not ill, who is not hungry enough to eat by himself properly prepared food when it is put before him will only be benefited by going without

food for a time. Provided water is given, any child of three or four or older may go for several days without the slightest risk of injury. Usually only one or two days of fasting are sufficient to work the change desired. Bad habits of eating such as have been described are particularly common in a spoiled child, especially if an only child; also in those whose nutrition is poor and when the mother feels that the only remedy is to get the child to take more food.

DIET

How many meals a day should be given to older children?

Up to the ninth or tenth year a mid-morning lunch should be provided, but after that only the three regular meals of the family. No other eating between meals should be allowed; but water should be taken freely.

Why should the food of children differ from that of adults?

Many foods are useful for adults but too indigestible for children. Adults need food for fuel, energy and to supply the waste of the body. Children need, in addition, foods for growth; also certain substances

(vitamins) not exactly food but contained in many common foods.

MILK AND MILK PRODUCTS: BUTTER, CHEESE, ETC.

Why should milk form a part of the diet of all children?

There is no other food that supplies so many of the elements needed for growth. Nothing can quite take its place. Even when the price of milk is high it is usually the cheapest of foods if its value to the child is taken into account.

Because of its digestibility it is peculiarly adapted to the diet of the child. It is especially the food of childhood. There are very few children who cannot take and digest milk if it is properly fed.

How much milk should be allowed daily?

With a diet in other respects sufficient, not less than sixteen ounces daily for every growing child; twice this allowance daily is better, including what the child takes in his other food or on cereals and in other ways than drinking.

What are the essential points in the use of milk?

It should be clean and as fresh as possible but not too rich. It is a mistake to select for children rich Jersey milk and use it as if it were ordinary milk.

Nor should a child be allowed to eat a hearty meal of solid food and drink at the same time one or two glasses of milk as if it were water. The disturbance of digestion which follows such a practice is often ascribed to the milk when it is simply the result of too much food. For children who have difficulty in digesting milk, it should be given warm (never ice cold) and if rich it should be partially skimmed or diluted; i. e., one part of water to five or six parts of milk; or salt or bicarbonate of soda may be added. It is also better not to allow milk at the meal when much fruit, especially when raw or sour fruits are given.

To what extent may cream be used?

Thick cream should not be given; of thin cream or top-milk, not more than two ounces twice a day should be allowed, usually on cereals. Cream should not be used upon fruits, particularly sour fruits.

The excessive use of cream or very rich milk is a common cause of disturbances of digestion with coated tongue, foul breath, pale gray stools, etc., usually passing under the name of "biliousness."

When and how much butter should be given?

Butter may be begun in the second year. It should be an important part of the diet throughout child-

hood. To children of four or five one teaspoonful of butter may be given with each meal, and to those of eleven or twelve years twice as much. Many children digest butter better than they do cream. It may be used upon cereals as well as upon bread.

Can the butter substitutes which are sold take the place of butter made from cow's milk?

Those made from some animal fats are almost as valuable as butter; but the various forms of vegetable fats, such as the nut margarines, peanut butter, etc., though cheap and useful foods, cannot replace butter made from cow's milk.

Should skimmed milk be given to children?

Skimmed milk and buttermilk are cheap and valuable foods for children. They supply protein which may partially replace meat and eggs in the diet. But since they lack fat they cannot take the place of whole milk. If regularly used for children butter or some other animal fat should be supplied.

Is the use of dried milk to be advised?

If fresh milk cannot be obtained, either because of cost or other circumstances, dried milk should be given. It is under most conditions to be preferred to condensed milk.

Should cheese be given to children?

Fresh "cottage" or cream cheese may be given upon dried bread to children of three or four years. Other forms of cheese are somewhat difficult of digestion and should not form a part of the diet of children before they are twelve or thirteen years old.

EGGS

To what extent may eggs be used in the diet of this period?

They form a most valuable food. It is important that they should be fresh, and only slightly cooked, soft boiled, poached, or coddled; fried eggs should not be given to young children and most omelets are objectionable before the age of seven.

The finely grated yolk of a hard-boiled egg may be given with advantage to many infants even as young as five or six months.

Is it not true that eggs often cause "biliousness"?

Very seldom, if fed as above advised. This is an old prejudice, but has little basis in fact.

How often may eggs be given?

Most children from five to ten years old will take one fresh egg for breakfast and often another for supper for an indefinite period with relish and benefit. There

are, however, some few who have a peculiar idiosyncrasy as regards eggs, and cannot take them at all.

Which are cheaper, eggs or meat?

Considering their value as foods, eggs even at sixty-five cents a dozen are cheaper than beefsteak at fifty cents a pound.

MEAT AND FISH

What meats may be given to young children?

The best are beefsteak, lamb chop, roast beef, roast lamb, chicken, turkey, and certain fish, such as sole or haddock, bass, shad, trout, chicken cod or halibut. Breakfast bacon may be given to healthy children of four or over.

What are the important points to be considered in giving meat to children?

Most meats should be rare, and either scraped or very finely divided, as no child can be trusted to chew meat properly. Meats are best broiled or roasted, but should not be fried.

Cold meats require much chewing, and should not be allowed young children.

How much meat should be given to children?

If we except the small piece of bacon for breakfast, no child should be given meat more than once a day. One good tablespoonful of lean meat is enough for a child of four or five; twice as much for a child of twelve or thirteen. If the diet contains plenty of milk, egg and certain vegetables like peas and beans all meat might be omitted without any ill effects on the child's nutrition.

Is not the excessive nervousness of many modern children due to the giving of meat, or at least aggravated by its use?

There is little ground for such a belief, unless an excessive amount of meat is given. Certainly cutting off meat from the diet of nervous children seldom produces any striking effect.

What meats should not be given to young children?

Ham, sausage, pork, liver, kidney, game, and dried and salted meats and fish; all of these are best withheld until the child has passed the tenth year.

VEGETABLES

Are vegetables important in the diet of children?

They form a very essential part. They give volume or bulk to the meal. From the amount of residue they leave in the intestines they are important in

overcoming a tendency to constipation. They furnish certain necessary salts and other food elements (vitamins) which the body requires for its normal growth.

What are the important things to be considered in selecting and preparing vegetables for children?

They should be as young and as fresh as possible. This applies especially to beets, lima beans, peas, and carrots. Old vegetables are tough, require much cooking and thorough chewing, otherwise they pass through the body undigested and often do harm. Vegetables should be steamed or boiled in a small amount of water; since much that is valuable dissolves in the water, this should be used in making soups, gravies, etc. Vegetables should be cooked until tender, the time depending upon their age and freshness. For children up to the age of three years vegetables should be rubbed through a fine sieve; for those up to seven or eight they should be thoroughly mashed with a fork.

What vegetables may be given to children?

White potatoes may be given once a day, thoroughly cooked — baked, boiled and mashed or stewed with milk, but not fried. Baked sweet potatoes may be given occasionally to children after the sixth or seventh year. Most important are the green vegetables, peas, string beans, asparagus, spinach, chard, beet

tops, cooked lettuce and in summer all kinds of "pot greens," squash, young beets, and lima beans; in winter, carrots, stewed celery, boiled onions and for those of eight or ten, turnips, boiled cabbage, cauliflower, parsnips, egg plant, oyster plant. Stewed tomatoes may be given to children of seven or eight. Green corn should not be given before the twelfth year unless finely grated.

Uncooked radishes, onions, cucumbers or raw cabbage should not be given to young children.

How much vegetable should be given daily?

At least one green vegetable every day and in summer two a day. The quantity will depend upon the amount of other food. A child of seven or eight should have at least two good tablespoonfuls of any of the vegetables mentioned at his principal meal. The fact that small particles of green vegetables appear in the stools is not proof that vegetables are disagreeing and that they should be stopped, but only shows the necessity for their being more finely divided, mashed or strained, before they are given.

Are canned vegetables to be recommended for children?

Many of the brands of canned vegetables are quite safe, particularly of peas, string beans, and asparagus. They are often better than the stale green vegetables

sold in the market. For children of seven or eight canned tomatoes may be added.

Are vegetable salads to be given to children?

As a rule all salads should be omitted until a child is ten or eleven years old. Salads are somewhat difficult to digest, particularly those made from green vegetables; they require thorough chewing, otherwise they may be a source of disturbance.

CEREALS

What are the important points in selecting and preparing cereals?

The cheapest cereals are those sold in bulk; oatmeal, cracked wheat, corn meal, hominy, rice and farina. More expensive but no better are those put up in special packages; the most expensive of all are the dry or "ready-to-serve" cereals; these last cost for their food value two or three times as much as cereals sold in bulk.

For constipated children coarse cereals should be selected. If white cereals are used bran may be added before cooking. All cereals for children should be thoroughly cooked; insufficient cooking is the most common cause of disturbances of digestion from cereals. Most of the bulk cereals require from three to four hours' cooking in a double boiler. The partially

cooked cereals sold in special packages should usually be cooked twice as long as directed on the label. The "fireless cooker" is a useful contrivance for cooking cereals.

Dry cereals are not to be recommended for regular use, though they are often to be preferred to imperfectly cooked cereals. It is better not to give any dry cereals to children before the fourth or fifth year; for older children their occasional use is not objectionable.

How much cereal should a child be allowed?

Usually cereals may be given twice a day. One large saucerful is sufficient for any child at a single meal; because a child is fond of cereals he should not be permitted to make his entire meal of them.

How are cereals to be served?

Usually with milk or thin cream; for variety, sometimes with butter; always with plenty of salt and with little sugar, one level teaspoonful at any age should be the limit.

BROTHS AND SOUPS

What broths and soups are to be recommended?

Of the meat broths, beef, mutton or chicken may be given. Those thickened with rice, barley, or corn-

starch, form a useful variety, especially with the addition of milk.

Vegetable purées of peas, beans, lentils, spinach, potato, celery, or asparagus may be used for children over five years old. Tomato soup should not be given to young children.

BREAD, CRACKERS, AND CAKES

What forms of breadstuffs are best suited to young children?

Fresh bread should never be given, but stale bread cut thin and freshly dried in the oven until it is crisp is very useful; also zwieback, the unsweetened being preferred. Very stale bread, three days old, may be given without drying. Oatmeal, gluten crackers, stale rolls or corn bread which has been split and toasted or dried till crisp, form a sufficient variety for most children; sweet crackers should be avoided.

What breadstuffs should be forbidden?

All fresh bread and rolls, buckwheat and other griddle cakes, waffles, all fresh sweet cake, especially if covered with icing and containing dried fruits. Lady fingers, plain cookies, ginger snaps are about as far as it is wise to go with children up to seven or eight years old.

DESSERTS

What desserts may be given to young children?

Mistakes are more often made here than in any other part of the child's diet. Up to six or seven years, only junket, plain rice, cornstarch or farina pudding without raisins, baked custard and, not more than once a week, a moderate amount of ice cream or fruit ice.

What should be especially forbidden?

Up to seven or eight years all pies, tarts, and pastry of every description, jam, syrups, and preserved fruits; nuts, candy, and dried fruits unless cooked. For older children free indulgence in these things, particularly between meals, is a cause of much digestive trouble.

Does "a little" do harm to small children?

Yes, in that it develops a taste for this sort of food, after which plainer food is taken with less relish. Besides, the "little" is very apt soon to become a good deal.

Does not the child's instinctive craving for sweets indicate his need of them?

That a child likes or craves sweets is the usual excuse of an indulgent parent. Every child likes his

own way, but that is no reason why he should not be trained to obedience and self-control; a child's fondness for sweets can hardly be considered a normal instinct. As a matter of fact, supported by everyday experience, no causes are productive of more disorders of digestion than the free indulgence in desserts and sweets by young children. It is a constantly increasing tendency, not easily controlled as a child grows older; and in early childhood the only safe rule is to forbid them, particularly between meals.

FRUITS

Are fruits an essential or important part of the diet?

They are a very important part. They are particularly useful for the effect they have upon the bowels. They have also an important effect upon the general nutrition. Fruits should be selected with care and given with discretion, especially in cities. In the country, where fruit is absolutely fresh, a somewhat greater latitude may be allowed than is given below.

What fruits may safely be given to children up to five years old?

As a general rule, only cooked fruits and the juices of fresh fruits.

What fruit juices may be used?

That from sweet oranges is the best, but the fresh juice of grape fruit, pineapple, peaches, strawberries, and raspberries may also be used.

What cooked fruits may be given?

Stewed or baked apples, prunes, pears, peaches, bananas, and apricots.

What raw fruits are to be particularly avoided with young children?

The pulp of oranges or grape fruit, also cherries, plums, all berries, pineapple, also apples and bananas unless thoroughly ripe, and then only in small amounts and with meals.

What precautions should be emphasized regarding the use of fruits?

That they should be used with greater care in hot weather and with children who are prone to attacks of intestinal indigestion.

What symptoms indicate that fruits should be avoided?

A tendency to looseness of the bowels with the discharge of mucus, or frequent attacks of abdominal pain or stomachache.

Should fruits be given to older children with meals or between meals?

As a rule it is better to give all fruits except the fruit juices with the meals.

Is there any special choice of meals at which fruit should be given?

The fruit juice given early in the morning upon an empty stomach works more actively upon the bowels than if it is given later in the day.

It is not, as a rule, wise to give cream or milk with sour fruits. Usually the fruit is best given at the mid-day meal, as a dessert, at a time when milk is not taken. It is in all cases important that the quantity of fruit should be moderate.

To what extent and how may dried fruits be given to children?

Dried fruits are available at all seasons and as a rule they are cheaper than fresh fruit except in the country and in season. They are almost as valuable as fresh fruits and may form an important addition to the diet of all children. Dried or "evaporated" apples, peaches and apricots when stewed make excellent substitutes for the fresh fruit. Stewed prunes, figs and dates are also valuable for young children and may be given without cooking to older children.

When mixed with white cereals they form a useful and palatable addition.

What are vitamins?

They are certain constituents or properties of food whose composition is not known but whose effects are very definite. They are necessary to health and growth and hence are especially important in the diet of children.

In what foods are the different vitamins found?

Vitamins exist in most of our common foods in their natural state, although they may be injured or destroyed by the processes used in refining, preserving or sterilizing foods.

Three vitamins are now well known.

Vitamin A is found in animal fats; it is abundant in milk and especially so in cod liver oil. It is also present in green vegetables.

Vitamin B is abundant in milk, eggs, potato, yeast, whole-grain cereals and it is present in some amount in nearly all our common foods.

Vitamin C is abundant in the juices of fruits, especially orange and lemon, and also in fresh green vegetables. Though it exists in milk in small amount it is destroyed by heat. If not present in the food, scurvy develops after a time. Provided the diet con-

tains reasonable amounts of milk, eggs, green vegetables, potatoes and fruits, one need fear no lack of vitamins in the food.

TEA AND COFFEE

At what age may tea and coffee be begun?

They should not be given to children before the age of seventeen or eighteen years.

Are they not useful foods?

Tea and coffee themselves have no food value whatever. They are stimulants for adults, not foods for children.

What harm do they do?

They excite and stimulate the nervous system; they take away the appetite for useful and necessary food. The appetite or desire for stimulation increases as children grow older. As commonly used they are a very important cause of nervous disorders among children and are productive of much harm. The same may be said of wine, beer and cider.

WATER

Do children require as much water as adults?

Relatively to their size they need much more.

Water keeps the kidneys and skin active and tends to prevent constipation. The free drinking of water is to be encouraged with all children. Usually they do not take enough for the best working of the functions of the body.

How much water should a child take daily?

The amount of water needed will of course be modified by the quantity of other fluid taken — milk, broth, fruit juices, etc. — but with the usual quantity of these the average child at the age of ten or eleven years should have from three to four glasses; in summer when perspiring freely, somewhat more than this.

Should water be drunk freely at meals?

The only objection to this is that it encourages rapid eating and insufficient chewing of the food. It is better under such conditions to drink at the beginning or at the end of the meal.

What besides water and milk may a child be allowed to drink?

Cocoa or chocolate, made with plenty of milk, may be given once a day to children of seven or eight years, particularly in the cold season. Lemonade, soda water and most "soft drinks" should not be given before the ninth or tenth year. A free indul-

gence in these articles in children of seven or eight years should not be permitted.

COMBINATIONS FOR THE DIFFERENT MEALS

What should guide one in combining articles of food for the different meals?

The diet should provide variety, not only to make the meal appetizing, but to furnish certain things necessary for growth, the so-called vitamins. These are present especially in milk, cereals, fruits and the green or leafy vegetables. If the diet contains these articles in reasonable amount this need will be amply supplied. Some form of meat is desirable, but not essential if the other articles mentioned are properly chosen. The same may be said of eggs.

What would be a proper diet for a child of eight or nine?

Breakfast: Cereal; milk; bread and butter; egg; stewed fruit.

Mid-morning lunch: Cup of milk, chocolate or soup; with crackers or bread and butter.

Dinner: Meat, chicken or fish; potato; one green vegetable; stewed fruit; bread and butter.

Supper: Cereal or milk toast; thick vegetable soup; plain pudding or custard; glass of milk; bread and butter.

How should the meals be arranged for a child of eleven or twelve?

The breakfast should be much the same as that for the younger child, but the quantities somewhat larger. The mid-morning lunch may be omitted. The other meals will vary according as the child takes a basket lunch to be eaten at school or goes home for his mid-day meal. If the child has a basket lunch at noon he should have a hearty meal at night. If he goes home for his dinner and time permits, this may be made the hearty meal and a lighter supper be given.

What sort of a lunch should a school child have?

It should be a generous one and made up of substantial food, not sweets chiefly nor trash. If possible, and it nearly always is possible, something hot should be provided at the school; a cup of soup or hot chocolate, or a glass of warm milk; or the child should carry a bottle of milk and a basket lunch of sandwiches, plain cake or cookies, and fresh ripe or dried fruit. Sandwiches should be made of stale wheat or corn bread and butter, with fillings of chopped meat, vegetables, egg, cottage cheese, peanut butter, chopped dried fruit or occasionally jelly.

What should the evening meal be?

The hearty meal or dinner should consist of meat,

potato and vegetables; bread and butter and some dessert of plain pudding, custard or stewed fruit, and a glass of milk. The lighter meal should consist of bread and butter, a vegetable soup, or cereal and eggs, one vegetable and a glass of milk.

When the dinner is given soon after twelve and the evening meal not until six o'clock or later, the child who comes home from school hungry at three or three-thirty should usually be given something at that time; a glass of milk or a cup of soup and a piece of bread and butter are sufficient.

How can a child be taught to eat more slowly?

It is often best to have the food for a single meal served in courses, only one article at a time and allow an interval between them. He should not be permitted to drink while eating, milk or water being given only at the beginning or the end of the meal. There is sometimes an advantage in having the child take his food with a very small fork or spoon, i. e., a small coffee-spoon for cereals, vegetables or puddings.

How can a child be taught to eat food which he needs but does not want?

This may relate to the amount of food or to the kind of food offered. The problem is a difficult one and early training has much to do with results. Scolding and nagging do no good and only make mat-

ters worse. Forcing or bribing should never be permitted. Improvement can usually be brought about in some of the following ways:

- (1) By the child's eating with other persons, especially with other children who take the same diet, rather than taking his meals alone.
- (2) By training him from infancy to eat what is prepared for him, not allowing him to select his own diet.
- (3) By giving plain simple food only, no highly seasoned desserts or entrées.
- (4) By giving no food except at the regular hours of meals.
- (5) By giving first at any meal the particular article which we most desire him to take—his vegetable, meat, milk, cereal or whatever the thing may be—the rest of his food for the meal not being served until the first thing has been eaten.

INDIGESTION IN OLDER CHILDREN

What are the different ways in which indigestion shows itself in children?

First, in acute disturbances which usually last for a few days only; and, secondly, in chronic disturbances which may continue for weeks or months.

Which of the two forms of indigestion is more likely to impair seriously the health of the child?

Chronic indigestion; for since the cause is not recognized it often goes on for months and even years unchecked.

What are the symptoms of acute indigestion?

These are familiar and easily recognized. They are vomiting, pain, undigested movements from the bowels, often fever and considerable prostration.

Such attacks are usually traceable to their proper cause, the removal of which is followed by prompt recovery.

What are the common causes of acute indigestion?

This is frequently due to overeating, to indulgence in some special article of improper food, or to eating heartily when overtired. Acute indigestion often marks the beginning of some acute general illness.

How should acute indigestion be managed?

One should bear in mind that for the time being the digestive organs have stopped work altogether. The important thing, therefore, is to clear out from the intestines all undigested food by some active cathartic, such as castor oil. The stomach has usually emptied itself by vomiting. All food should be stopped for from twelve to thirty-six hours, according to the severity of the attack, only water being given.

At the end of this time is it safe to begin with the former diet?

No; for such a procedure is almost certain to cause another attack of indigestion. At first only broth, thin gruel, very greatly diluted milk or whey should be given. The diet may be very slowly but gradually increased as the child's appetite and digestion improve, but in most cases a week or ten days should elapse before the full diet is resumed.

What are the symptoms of chronic indigestion?

These, although familiar, are not so easily distinguished and are very often attributed to the wrong cause. There are usually general symptoms such as indisposition, disturbed sleep, grinding of the teeth, fretfulness, languor, loss of weight and anemia. There are besides local symptoms: flatulence, abdominal pain, abdominal distention, constipation, or looseness of the bowels with mucus in the stools, foul breath, coated tongue, loss of appetite, or an abnormal, capricious appetite. Many of these symptoms are often wrongly ascribed to intestinal worms.

What are the common causes of chronic indigestion?

This is generally the result of a bad system of feeding, either the prolonged use of improper food or of improper methods of feeding.

Examples of bad methods of feeding are, coaxing or forcing to eat, rapid eating with insufficient mastication, eating between meals, allowing a child to have his own way in selecting his food, as when he lives largely upon a single article of diet. Things to be considered under the head of improper food are: indulgence in sweets, desserts, etc., the use of imperfectly cooked foods, especially cereals and vegetables, and of raw or stale fruits.

Is it not true that a diet or a special article of food which does not make a child ill is proof that such a diet or such a food is proper for a child?

By no means; with many people the only guide in feeding children is that the article in question did not make the children sick, therefore it is allowable. This is a very bad principle. A better one is to adopt such a diet as will nourish the child's body with the least possible tax upon his digestive organs; in other words, to exclude articles which experience has shown to be injurious to most children.

How should chronic indigestion be managed?

This is a much more difficult matter than the treatment of acute indigestion, for, as it is usually the result of the prolonged use of improper food or of an improper method of feeding, a cure can be

accomplished only by a discovery and removal of the cause. These conditions do not tend to right themselves.

Is chronic indigestion curable?

In the vast majority of cases it is so, but only by faithfully observing for a long period the rules for simple feeding laid down elsewhere. One of the greatest difficulties in the way of recovery is that parents and nurses are unwilling to follow a restricted diet long enough to secure a complete cure, or to change radically their methods of feeding, but expect the child to recover by simply taking medicine.

For how long a period is it necessary to continue very careful feeding?

In any case it must be done for several months; with most children for two or three years; with some, throughout childhood, for with them the slightest deviation from established rules is sure to provoke a relapse.

Is not medicine useful?

It is undoubtedly of assistance for the relief of some symptoms, but the essential thing is correct feeding and the adoption of proper rules of general hygiene; without these nothing permanent can be accomplished.



P A R T I V

MISCELLANEOUS



IV

MISCELLANEOUS

THE BOWELS

How many movements daily should an infant have during the first few weeks of life?

Usually two or three a day for the first week, and then one or two each day.

How many after a child is a month old?

A healthy child should have at least one movement each day; many have two and some more than two; but it is the character of the stools rather than their number which is to be taken as the evidence of perfect digestion.

What is the appearance of a healthy movement of a nursing infant?

It is soft, almost loose, but smooth, containing no lumps. It has a yellow color with often a greenish tinge, with an aromatic but not unpleasant odor.

What is the appearance of a normal movement of an infant who is taking modified cow's milk?

It is paler in color and smooth but firmer in con-

sistency, often slightly constipated; the odor is usually somewhat foul especially when barley or other cereals are added.

When are the stools dark brown or black?

While taking bismuth, iron, and sometimes when taking much meat or beef juice; also while taking many of the prepared foods. They may be dark brown or black from blood. This last is a condition which may indicate serious illness.

How may a child be trained to be regular in the action of the bowels?

By endeavoring to have them move at exactly the same time every day.

At what age may an infant be trained in this way?

Usually by the third or fourth month if training is begun early.

What is the best method of training?

A small chamber, about the size of a pint bowl, is placed between the nurse's knees, and upon this the infant is held, his back being against the nurse's chest and his body firmly supported. This should be done twice a day, after the morning and afternoon

feedings, and always at the same hour. At first there may be necessary some local irritation, like that produced by tickling the anus or introducing just inside the rectum a small cone of oiled paper or a piece of soap, as a suggestion of the purpose for which the baby is placed upon the chamber; but in a surprisingly short time the position is all that is required. With many infants after a few weeks the bowels will move as soon as the infant is placed on the chamber.

What advantage has such training?

The regular habit formed in infancy makes regularity in childhood much easier. It also saves the nurse much trouble and labor.

What is the best time for the movement?

In most cases immediately after the first feeding in the morning. If the bowels do not move then, an effort should be made after the next feeding.

What other means besides training are useful in overcoming chronic constipation?

The best are diet, suppositories, oil injections and massage.

For changes to be made in the milk formula, see page 99. The addition of some of the preparations

of maltose (see page 63) is often useful. For older infants the fruit juices are particularly beneficial when given before the first morning feeding.

Suppositories which may be regularly used are those made of cocoa butter and the gluten suppositories of the Entona Company. One may be given the first thing in the morning; they act rather slowly. In obstinate cases one may also be used at bedtime. Soap or glycerine suppositories act more quickly, but are too irritating for regular or frequent use.

Small injections of sweet oil (one-half to one tablespoonful) may be given at night and retained. Injections of water should not be employed for the relief of chronic constipation.

Massage consists in rubbing and kneading the abdomen. It is stroked gently at first and deeper pressure and manipulation then used as the child becomes accustomed to it. It should be employed for eight or ten minutes twice a day. It should not be done just after feeding.

SLEEP

Should a child sleep in the same bed with his mother or nurse?

Never, if this can possibly be avoided. If the infant sleeps with the mother, there is always the

temptation to frequent nursing, which is injurious to both mother and child. Older children also should, if possible, have separate beds; many contagious diseases and bad habits are contracted by children sleeping together.

How should an infant's bed be prepared?

The mattress should be firm but soft, the pillow very thin, preferably of hair, and the covering not excessive. The position should be changed frequently from one side to the other.

How much sleep is natural for a newly-born baby?

A baby with a good digestion and proper food will usually sleep at this period about nine tenths of the time.

How much should a baby sleep at six months?

About two thirds of the time.

At what age may an infant go all night without feeding?

After three months a healthy child should not be fed or nursed between 10 P. M. and 6 A. M. Some children at four or five months habitually go from 6 P. M. to 6 A. M. without feeding, and thrive well.

At eighteen months nearly all children easily go from 6 P. M. to 6 A. M. without feeding.

How should a baby be put to sleep?

The room should be darkened and quiet, the child's hunger satisfied, and the child made generally comfortable and laid in his crib.

Is rocking necessary?

By no means. It is a habit easily acquired, but hard to break, and a very useless and sometimes injurious one. The same may be said for sucking a rubber nipple, or "pacifier," and all other devices for putting children to sleep.

What are the principal causes of disturbed sleep?

As quiet peaceful sleep is a sign of perfect health, disturbances of sleep may be produced by almost anything which is wrong with the child.

1. Habitual disturbance of sleep in infants is most frequently associated with the food or feeding. It may be from the discomfort of chronic indigestion due to improper food. In bottle-fed infants it is often the result of overfeeding; in those who are nursed it is often due to hunger. A common cause is frequent night feeding; an infant who is fed three or four times during the night is almost invariably a bad sleeper.

2. Disturbed sleep or sleeplessness may be due

to causes purely nervous. Such are bad habits acquired by faulty training; as when the nursery is lighted and the child taken from his crib whenever he wakes or cries; or when some of the contrivances for inducing sleep have been used. Any excitement or romping play just before bedtime, and fears aroused by pictures or stories, are frequent causes. Children who inherit from their parents a nervous constitution are especially likely to suffer thus.

3. There may be physical discomfort from cold feet, insufficient or too much clothing, or want of fresh air in the sleeping room.

4. Interference with breathing due to obstruction from large tonsils or adenoids. These often cause great restlessness and lead a child to assume many different postures during sleep, sometimes lying upon the face or upon the hands and knees.

5. Chronic pains or frequently recurring night pains may be causes of disordered sleep, when a child wakes with a sudden sharp cry. In infants this may be due to scurvy, sometimes to syphilis. In older children it may be the earliest symptom of disease of the hip or spine.

6. Sleeplessness and disturbed sleep are frequent whenever the general condition falls much below a healthy standard; e. g., in infants who are not thriving and in children suffering from marked anemia.

How are children who sleep too little, or whose sleep is constantly disturbed, to be treated?

Never by the use of soothing syrups or other medicines. Successful treatment consists in the discovery and removal of the cause.

How much sleep should be allowed for older children?

From four to six years.....	12 hours
From seven to ten years.....	11 hours
From eleven to fourteen years.....	10 hours
From fourteen to sixteen years.....	9 hours

Besides this, up to six years a child should have a nap during the day of three-quarters to one hour. Regularity and habit have much to do with securing the amount of sleep which children need.

Do children ever sleep too much?

It is doubtful if healthy children ever do. Excessive sleep is an important symptom of some diseases of the brain. Otherwise it seldom if ever occurs unless soothing syrups or other drugs have been given.

EXERCISE

Is exercise important for infants?

It is as necessary for them as for older children.

How is it obtained?

A young baby gets his exercise by screaming, waving his arms, kicking, etc. The clothing should not be so tight as to make these movements impossible. At least twice a day the infant should be allowed for fifteen or twenty minutes the free use of his limbs by permitting him to lie upon a bed in a warm room, with all clothing except the shirt, stockings, and napkin removed. Later, when in short clothes, the baby may be put upon a thick blanket or quilt laid upon the floor, and be allowed to tumble about at will. A nursery pen two feet high, made to surround a mattress, is an excellent device and makes a convenient box stall for the young animal, where he can learn to use both his arms and legs without the danger of injury. Only by exercise such as this do the muscles have an opportunity to develop properly.

What are the important things to be considered in the exercise of older children?

That it be in the open air whenever possible.

That the clothing for active exercise be light.

That the amount and character of exercise be carefully regulated for children who are below par—underweight, highly nervous or delicate.

Competitive exercises should be permitted only

after a medical examination to make sure that no injury is done to the heart.

THE CRY

When is crying useful?

In the newly-born infant the cry expands the lungs, and it is necessary that it should be repeated for a few minutes every day in order to keep them well expanded.

How much crying is normal for a very young baby?

From fifteen to thirty minutes a day is not too much.

What is the nature of this cry?

It is loud and strong. Infants get red in the face with it; in fact, it is a scream. This is necessary for health. It is the baby's exercise.

When is a cry abnormal?

When it is too long or too frequent. The abnormal cry is rarely strong, often it is a moaning or a worrying cry, sometimes only a feeble whine.

What are the main causes of such crying?

Pain, temper, hunger, illness, and habit.

What is the cry of pain?

It is usually strong and sharp, but not generally continuous. It is accompanied by contraction of the features, drawing up of the legs, and other symptoms of distress.

What is the cry of hunger?

It is usually a continuous, fretful cry, rarely strong and lusty.

What is the cry of temper?

It is loud and strong and accompanied by kicking or stiffening of the body, and is usually violent.

What is the cry of illness?

There is usually more of fretfulness and moaning than real crying, although crying is excited by very slight causes.

What is the cry of indulgence or from habit?

This is often heard even in very young infants, who cry to be rocked, to be carried about, sometimes for a light in the room, for a pacifier to suck, or for the continuance of any other bad habit which has been acquired.

What is the most certain way of causing a child to develop the crying habit?

By giving him everything he cries for. This will

soon do it even in one with a most amiable disposition.

How is such a habit to be broken?

By never giving a child what he cries for.

How can we be sure that a child is crying to be indulged?

If he stops immediately when he gets what he wants, and cries when this is withdrawn or withheld.

What should be done if a baby cries at night?

One should see that the child is comfortable—the clothing smooth under the body, the hands and feet warm, and the napkin not wet or soiled. If all these matters are properly adjusted and the child simply crying to be taken up, he should not be further interfered with. If the night cry is habitual some other cause should be sought.

How is a baby to be managed that cries from temper, from habit, or to be indulged?

He should simply be allowed to "cry it out." This may require an hour, and, in extreme cases, two or three hours. A second struggle will seldom last more than ten or fifteen minutes, and a third will rarely be necessary. Such discipline is not to be

carried out unless one is sure as to the cause of the habitual crying.

Is it likely that rupture will be caused from crying?

Not in healthy young infants if the abdominal band is properly applied, and very seldom after infancy even when no abdominal support.

RUPTURE

What is a rupture?

The usual form is a protrusion of part of the intestine from the abdominal cavity; the most common place in infants is at the navel; in older children in the groin.

How is rupture recognized?

A small lump, varying in size from a small finger tip to a walnut, appears in one of the places mentioned, usually after coughing, crying or straining. It disappears or can easily be pushed back when the child is lying down.

How is rupture at the navel in infancy prevented?

By giving the abdomen more support in the early months, particularly in the case of thin or delicate

infants. For this reason the snug binder is to be preferred to the loose knitted band. Thin infants may with advantage wear the binder for five or six months; fat infants may dispense with it in a few weeks.

What should be done if rupture at the navel has occurred in an infant?

For the usual small rupture, which is seldom more than half an inch in diameter, the best support is a piece of surgeon's adhesive plaster. This should be $1\frac{1}{2}$ inches wide and 7 or 8 inches long. It should be placed tightly across the abdomen over the navel after the rupture has been pushed back, held in place until it adheres, and worn until it becomes loose, usually a week or two. When it loosens a fresh piece of plaster should be applied. The plaster does not usually come off in the bath so this need not be omitted. The plaster can easily be removed at any time with benzine or gasoline.

How long should the plaster be worn?

By most infants for six or eight months; if applied when very young a shorter time may be sufficient. Before reapplying, the skin should be carefully cleaned and powdered. The plaster should not be applied exactly in the same place each time, sometimes transversely across the abdomen, some-

times crossing the navel obliquely. In this way soreness of the skin may be prevented.

What should be done for a rupture in the groin, or a large rupture at the navel?

These are much more serious and should not be neglected. They will usually require a truss, and sometimes a surgical operation. The child should be placed under the care of a physician.

LIFTING CHILDREN

How should a young baby be lifted from his bed?

The right hand should grasp the clothing below the feet, and the left hand should be slipped beneath the infant's body to his head. He is then raised upon the left arm.

What is the advantage of this?

The entire spine is supported, and no undue pressure is made upon the chest or abdomen, as often happens if the baby is grasped around the body or under the arms.

How should a child old enough to run about be lifted?

Always by placing the hands under the child's arms, and never by the wrists.

What injury may be done by lifting the child by the wrists or hands?

Often serious injury is done to the elbow or shoulder joints.

THE TEMPERATURE

What is the normal temperature of an infant?

The normal temperature varies more than in adults. In the rectum it usually fluctuates between 98° and 99.5° F.; but variations between 97.5° F. or of 100.5° F. are not uncommon, even in healthy infants.

Where should the temperature of infants and young children be taken?

The rectum is altogether the best place, and next to this the groin. The rectal temperature is from half a degree to a degree higher than that in the groin.

How long should the thermometer be left in place to take the temperature?

Two minutes in the rectum, and five minutes in the groin.

Is the temperature of a young child a good guide as to the severity of his symptoms in illness?

As a rule it is. A temperature of 100° to 102°

F. commonly means a mild illness, and one of 104° F. or over a serious one. The duration of the fever is, however, even more important than the height of the temperature. It should be remembered that in all young children slight causes often produce a high temperature which lasts for a few hours; one should not therefore be unduly alarmed unless the temperature continues high, or is accompanied by other important signs of illness.

Is not a high temperature a more serious symptom in a young child than in an adult?

The opposite is rather the case. Young children are extremely sensitive to conditions which produce fever, and the thermometer often gives an exaggerated idea of the severity of the symptoms. A cause which in an adult might produce a temperature of 102° F. or 103° F. in a young child would very likely be accompanied by a temperature of 104° or 105° F.

THE NERVOUS CHILD

What are the principal causes of excessive nervousness in infants and young children?

The most important predisposing causes are an inherited nervous constitution, and the delicate struc-

ture and rapid growth of the brain in early life. It should be remembered that the brain grows as much during the first year as during all the rest of life. Important exciting causes of nervousness are anemia, disturbances of digestion and malnutrition; children who are much below normal weight are especially prone to develop nervous symptoms.

How does extreme nervousness show itself in infants and young children?

They sleep but little, waken at the slightest noise; often have long fits of crying; they are often very active and excitable; from comparatively slight causes they may have convulsions; the temperature from minor illnesses is higher than with other children; they vomit easily; their gain in weight is usually slow and they are prone to develop bad habits, such as thumb-sucking, nail-biting or even masturbation.

What can be done to prevent or cure this condition of nervousness?

Causes which are discovered should be removed so far as possible. It should be recognized that all infants need quiet peaceful surroundings for the normal growth and development of the brain; those of nervous families, especially. Nervous infants should see but few people, should be left much alone,

should not be romped or played with. They should never be quieted by means of soothing syrups or the "pacifier."

At what age may playing with babies be begun?

Babies under six months old should never be played with; and the less of it at any time the better for the infant.

What harm is done by playing with very young babies?

They are made more nervous and irritable, sleep badly, and suffer from indigestion and cease to gain in weight.

When may young children be played with?

If at all, in the morning, or after the mid-day nap; but never just before bedtime.

THE DELICATE CHILD

What is meant by a delicate child?

One with feeble vitality; usually much below the average both in height and weight. The rate of growth is very slow; there is but little muscular endurance, little resistance to disease and slow recovery after any form of illness. Such children were often

feeble infants, reared with greatest difficulty; they require constant intelligent care or they fall ill.

How are such children to be managed?

They must have the simplest and most nourishing diet—fed up to seven or eight years old as carefully as infants. Their habits must be absolutely regular; the slightest variation from the normal routine is often followed by serious upsets. They need two or three more hours in bed than the average child and the mid-day rest should be continued until they are nine or ten. They are often much benefited by spending one entire day each week in bed. They require much fresh air, but no coddling. The amount of exercise they can take is limited and one should be careful not to exceed it. They should especially be protected against measles and whooping cough.

What are their chances for improvement as they grow up?

Provided they get through the early years without acquiring any serious disease, the outlook improves with each year. Some take a decided start for the better at seven or eight years, others not until toward puberty; but with proper care it is surprising how many reach adult life in good physical condition.

TOYS

What points should guide one in selecting toys and playthings for young children?

The instinct in a baby to put everything into the mouth is so strong that nothing should be given that cannot be safely treated in this way. Hence one should choose toys which are smooth, those which can be easily washed, and those which cannot be swallowed.

One should avoid (1) toys with sharp points or corners; (2) those with loose parts that might be detached or broken off and swallowed; (3) small objects which might be swallowed or pushed into the nose or ear, such as coins, marbles, and safety-pins, also beads and buttons unless strung upon a stout cord; (4) painted toys; (5) those covered with hair or wool. Infants have often been severely injured by swallowing what they have pulled off from their small toy animals.

What points are to be considered in selecting the toys and playthings of a child over two years old?

It should be remembered that toys are not merely a source of amusement, but that they have an educational value as well. Those are therefore to be preferred, the use of which develops the child's imagination, and with which he can be taught to amuse

himself. For boys nothing can surpass blocks, toy soldiers, balls, engines and trains of cars; and for girls, dolls and housekeeping sets. The complicated mechanical toys now so much in vogue usually give only a momentary pleasure, and as soon as the wonder at their operation has worn off, they have lost interest for the child except that which he gets in breaking them to see what makes them go.

What important things can be taught children with their toys and how may this be done?

The imagination may be developed, and children may be trained to habits of neatness, order and regularity, and to concentration of mind.

To this end toys should be kept in an orderly way upon a shelf in the nursery or in a closet, never piled in a miscellaneous heap in the corner of the room. Children should select their toys and play with one thing at a time, which they should be taught to put away in its place before another is given. They should never be allowed to have a dozen things strewn about the room at one time, with none of which they are occupied.

KISSING

Are there any valid objections to kissing infants?
There are many serious objections. Tuberculosis,

diphtheria, syphilis, and many other grave diseases may be communicated in this way. The kissing of infants upon the mouth by other children, by nurses, or by people generally, should under no circumstances be permitted. Infants should be kissed, if at all, upon the cheek or forehead, but the less even of this the better.

CONVULSIONS

What should be done for a child in convulsions before a doctor arrives?

In the first place it should be known that an attack of convulsions is seldom in itself a dangerous thing. In the great majority of cases convulsions last but a few minutes, even without any treatment; usually there is too much, rather than too little treatment given.

The child should be kept perfectly quiet with cold applied to the head and heat to the feet; the entire body may be wrapped in a large towel which has been wrung out of mustard water—one tablespoonful of mustard to two quarts of tepid water. Materials for a hot bath should be ready so that the doctor can give one if necessary.

When is a hot bath useful?

If the convulsions have continued until the pulse

is weak, the face very pale, the nails and lips blue, and the feet and hands cold, the hot bath will be useful by bringing blood to the surface and relieving the heart, lungs, and brain.

How should the bath be given?

The temperature should not be over 105° F.; this should always be tested by a thermometer if one can be obtained. Without this precaution, in the excitement of the moment, infants have frequently been put into baths so hot that serious and even fatal burns have been produced. If no thermometer is available the nurse may plunge her arm to the elbow into the water. It should feel warm, but not so hot as to be at all uncomfortable. One half a teacupful of powdered mustard added to the bath often adds to its efficacy.

FOREIGN BODIES

What should be done if a foreign body has been swallowed?

First, be sure that the object has actually been swallowed. Often needless alarm is allayed by finding in the child's crib or elsewhere the thing supposed to have been swallowed. Next examine the throat with the finger. If the foreign body has lodged there remove it. If it has passed from the throat it has

usually gone into the stomach. The stools should be examined daily to see if the foreign body passes the bowel.

What further treatment is needed?

The child should be given plenty of dry food, like bread, potato, cereal, etc., but under no circumstances either an emetic or cathartic. An infant may have the usual food.

Not only smooth objects such as buttons, coins and fruit stones, but nearly always do those with sharp angles, and even safety pins, readily pass the bowel without doing any injury.

What harm would a cathartic do?

It is likely to hurry the foreign body too rapidly through the intestine and in this way do harm; otherwise it becomes coated with fecal matter and passes the intestine usually without doing injury.

How long a time is required for a foreign body to pass the bowel?

In most cases but five or six days, occasionally two or three weeks, and sometimes even longer.

What should be done if a child gets a foreign body into the ear?

Unless this can easily be removed with the fingers it should not be meddled with, for it is likely to

be pushed farther into the ear. The child should be taken to a physician.

What should be done if there is a foreign body in the nose?

The child should blow his nose forcibly while the empty nostril is compressed. Unless this removes it a physician should be called. Meddlesome interference is always harmful.

COLIC

What are the symptoms of colic?

There is a strong, hard cry, which comes suddenly and returns every few minutes. With this there is drawing up of the feet, contraction of the muscles of the face, and other signs of pain. The abdomen is usually tense and hard.

What should be done for a baby with colic?

First, see that the feet are warm. Place them against a hot-water bag (covered with flannel lest it may burn the skin) or hold them before an open fire; apply a hot flannel to the abdomen, or let the child lie upon his stomach across a hot-water bag. If the colic continues, a half teacupful of warm water containing ten drops of turpentine may be injected

into the bowels with a syringe; at the same time the abdomen should be gently rubbed so as to start the wind. If the gas is in the stomach, half of a soda mint tablet may be given in a tablespoonful of very warm water.

EARACHE

What are the symptoms of earache?

The pain is generally severe and accompanied by a sharp scream; the child often puts the hand to the affected ear, or cries whenever it is touched. The pain is likely to be prolonged and continuous.

How should a child with earache be treated?

The ear should be irrigated with a solution of boric acid (two teaspoonfuls to the pint) as warm as can be borne. Dry heat may then be applied in several ways. The ear having been first covered with cotton, a small hot-water bag or one filled with hot salt or bran may be bound over it with a bandage; or a small butter plate heated in hot water may be used in the same way. The hot-water bag may be held against the ear or the child may lie with his head upon it. The use of such substances as oil and laudanum in the ear is not to be recommended.

CROUP

What are the symptoms of croup?

There is a hollow, dry, barking cough, with some difficulty in breathing.

When is this likely to come on?

Usually at night.

Is simple croup dangerous?

The ordinary croup of infants is spasmodic croup, and is very rarely dangerous, although the symptoms seem very alarming.

What are the symptoms?

In a mild attack there is simply noisy breathing, especially on drawing in the breath, with a tight, barking, or croupy cough. In a severe attack the child's breathing is more noisy and becomes difficult.

What is the dangerous form of croup?

Membranous croup, which is the same thing as diphtheria of the larynx.

What are the symptoms of membranous croup?

They are similar to those of spasmodic croup, but come on more gradually and are much more severe. A doctor should be summoned at once.

What should be done for a baby who has spasmodic croup?

The room should be very warm, hot cloths or poultices should be applied over the throat, and either a croup kettle or an ordinary tea-kettle kept boiling in the room. This is more efficacious if the child is placed in a tent made by a raised umbrella with a sheet thrown over it, and the steam introduced beneath the tent. If the symptoms are urgent, ten drops of the syrup of ipecac should be given every fifteen minutes until free vomiting occurs. Whenever the symptoms reach a point where breathing becomes difficult, a doctor should be summoned without delay.

CONTAGIOUS DISEASES

What are the first symptoms of measles?

Measles come on rather gradually with slight fever, cough, sneezing, watery eyes and nose, much like an ordinary severe cold in the head. The eruption appears after three or four days, first upon the face and neck as small red spots, and spreads slowly over the body.

Is measles a serious disease?

In infants and during the winter season it is likely to be very serious on account of the danger of

bronchitis and pneumonia, which frequently accompany it. No young child should be voluntarily exposed to this disease, and children who are delicate or prone to disease of the lungs should be especially protected against it.

When and how is measles contagious?

Measles may readily be conveyed from the very beginning of the catarrh, two or three days before any eruption is present. It is very seldom carried by healthy persons. Its poison does not cling to a sick room.

What is German measles?

German measles, or rubella, is a distinct disease and has nothing to do with ordinary measles. It is extremely rare for a child to be very ill with it. There is usually a very extensive eruption which may cover the body, but few other symptoms.

What are the first symptoms of scarlet fever?

Generally it begins abruptly, with vomiting, fever, and sore throat. The eruption usually appears within twenty-four hours as a red blush, first upon the neck and chest, and spreads rapidly.

When and how is scarlet fever contagious?

Scarlet fever is only slightly contagious for the first one or two days of the attack. It is most con-

tagious at the height of the disease. Mild cases are quite as contagious as severe ones. In fact it is by the mild unrecognized cases that the disease is very often spread. It may however be carried by clothing or bedding from the sick room and, though infrequently, by healthy persons who have been in contact with cases.

How does whooping-cough begin?

For a week or ten days it cannot be distinguished from the cough due to an ordinary cold on the chest. Then the attacks of coughing gradually become more severe, especially at night, the child gets red in the face, the eyes water with the paroxysm and vomiting may follow. After a severe coughing fit the breath is caught with a peculiar noise known as the "whoop."

How does chicken-pox begin?

It usually comes out gradually, as widely scattered pimples over the scalp, face, and body, many of which soon become small vesicles, resembling tiny blisters and afterwards dry to form crusts. There is itching and local discomfort but little fever, and the child rarely seems to be very ill.

How does diphtheria begin?

Sometimes abruptly, but more often gradually,

with sore throat and swelling of the glands of the neck, with white patches upon the tonsils, or a free discharge, which may be bloody, from the nostrils.

How does mumps begin?

As a swelling upon the jaw, just beneath the ear. As it increases it extends forward upon the cheek and backward behind the ear. It may affect one or both sides.

Mumps is not very common in young children, and in them it is usually mild. After twelve or thirteen years it is likely to be more severe.

How long after exposure do the first symptoms usually appear in the different diseases?

In scarlet fever in from two to five days (rarely a week); in measles in from nine to fourteen days (rarely as long as twenty days); in whooping-cough in from nine to fourteen days; in chicken-pox in from fourteen to sixteen days; in German measles in from ten to sixteen days; in mumps in from eighteen to twenty-one days; in diphtheria, variable, one or two days, or as long as two weeks.

Which of these diseases are most contagious?

Measles and chicken-pox are very contagious, and

very few children who have not had them can come near a person suffering from either disease without taking it. Whooping-cough is almost as contagious as measles, and for young babies even more so. A very close exposure is not necessary in the case of either of these diseases. Scarlet fever and diphtheria are much less contagious; for both of these a pretty close exposure is necessary.

How long should a child after any of these diseases be kept away from other children?

With measles, for four days after the rash is entirely gone; with scarlet fever, for at least three weeks after the rash is gone, and longer if there is a discharge from the nose, ears, throat or glands; with whooping-cough, usually for two months, and so long as the typical whoop continues; with chicken-pox, until all crusts have fallen off and the scars healed, usually for about three weeks after the eruption appears; with German measles for one week after the eruption has faded; with diphtheria, at least ten days after the throat is well in a very mild case, and four weeks if the case has been severe or until cultures show the nose and throat to be free from the diphtheria germs; with mumps for one week after the swelling has gone.

What should be done when a child shows the first symptoms of serious illness?

The child should be put to bed. If an infant, the food should be diluted to one half the usual strength; if an older child, only fluid food should be given. If the child seems feverish, the temperature should be taken. If the bowels are constipated, a dose of castor oil may be given, but no other medicine without the doctor's orders. The doctor should be called at once, and until he comes all other children excluded from the room.

By what nursery training may the examination and treatment of sick children be made much easier?

By teaching all children to gargle, to show the throat, to take tablets or capsules, and by constantly teaching them to regard the doctor as the child's best friend, and his visits as a great treat. On no account should a child be frightened into obedience by threats of what the doctor will do.

With care and patience most children may be taught to gargle and take capsules at four or five years, and to show the throat willingly at two or three. All these matters should be made a part of the child's education.

SCURVY

What is scurvy and how is it produced?

Scurvy is a disease of nutrition produced by the prolonged use of a diet which is lacking in one of the essential vitamins. Certain foods like bread, cereals and most of the prepared infant foods do not contain this vitamin. It is very abundant in orange juice. Although it is present in some foods, in milk for example, it is destroyed by heating as in boiling, pasteurizing or sterilizing. Symptoms of scurvy are seldom seen until a diet lacking this vitamin has been continued for several months.

What symptoms are seen in an infant with scurvy?

At first there is only indefinite and occasional soreness in the legs so that the child cries out when handled. As this soreness becomes more severe the child is often thought to have rheumatism. The upper gums swell and are of a deep purple color. There may be bleeding from the gums, or nose, or black-and-blue spots may be seen upon the legs. There is often swelling just above the ankles or just above or below the knees. The child grows pale, loses appetite and weight, and sleeps badly.

What should be done when an infant shows signs of scurvy?

The diet should at once be changed to fresh milk, properly modified according to the child's digestion, but not sterilized or pasteurized. From two to three ounces of fresh fruit juice should be given daily; orange juice is the best. One tablespoonful may be given five or six times a day about one hour before feeding. Quite as effective and less expensive is the juice of fresh or canned tomatoes. It should be strained and may be used in the same quantities as orange juice. As the symptoms improve the amount of the juice may be diminished.

Properly treated an infant with scurvy generally recovers promptly and completely. If not recognized, or untreated, scurvy may cause death.

RICKETS

What is rickets?

Rickets is a chronic disease of nutrition occurring chiefly between the ages of five and eighteen months, much more frequently in winter than in summer.

Its principal symptoms are: sweating of the head, late dentition and walking, relaxation of the ligaments, flabby muscles, large abdomen and often anemia. The bones are soft and bend readily, caus-

ing various deformities of the chest, also knock-knee, bow-leg, etc.

How is rickets to be treated?

The special treatment of rickets consists in direct exposure of the body to sunlight and the administration of cod liver oil. Either of these things will increase the deposit of lime in the bones, the lack of which is the most striking feature of the disease. Only small doses of cod liver oil are necessary; for a child of five or six months ten drops three times a day is usually sufficient.

The same measures, cod liver oil and sunlight, will also prevent the development of rickets in children whose diet and surroundings are such as to render the occurrence of the disease likely. For such children, since sunlight in winter is often unobtainable, cod liver oil should be given through the winter.

Rickets is more apt to occur in children who are fed on prepared infant foods or condensed milk but it may occur with almost any form of diet; occasionally it is seen in nursing infants.

ANEMIA

What is anemia and what are its most common causes in infants and young children?

Anemia is a condition in which the blood is poor

both in coloring matter and in red cells. It is of frequent occurrence. Its most common causes at these ages are lack of fresh air and improper feeding.

What symptoms are seen in children suffering from anemia?

Anemic children show marked pallor, which is especially noted in the lips and ears; they usually have poor circulation, tire easily and suffer from cold hands and feet. They are often much below weight, gain very slowly and are generally below par physically.

What particular mistakes in feeding are likely to lead to anemia?

In infants it is often an exclusive diet of milk for too long a period. Milk cannot be considered a perfect food except for young infants. Anemia is seen in those who are nursed entirely for fifteen or sixteen months, and often in those who are artificially fed, whose diet is chiefly or entirely cow's milk, sometimes until they are two and a half or three years old. This usually happens because a child has not been weaned from the bottle and refuses all solid food as long as he is allowed to take as much milk from a bottle as he wishes.

How are these cases to be managed?

Nursing infants should begin to take other food after the eighth or ninth month. It is seldom advantageous to continue to nurse any child longer than one year. All infants taking a bottle should be weaned from it by the twelfth or thirteenth month except possibly for the 10 P. M. feeding, and they should be given other food than milk by the seventh or eighth month.

The food of anemic children should consist of not more than twenty to twenty-four ounces of milk a day, the rest of the diet being made up of cereal, particularly oatmeal, eggs, beef juice, green vegetables (especially spinach and string beans), orange juice or stewed prunes.

The child should be kept in the open air as much as possible, in the winter at least four or five hours a day. Sun baths are also of much value in the anemia of infants and older children. In addition, medicinal treatment is usually necessary.

If a child is taken with acute diarrhea, what should be done?

With a moderate looseness of the bowels in an older child, solid food should be stopped, and broth or boiled milk given diluted with wheat or barley

gruel; the child should be kept in bed, as walking about always aggravates such a disturbance. If the symptoms are more severe and attended by fever and vomiting, all milk should be stopped at once, and only broth, barley water, or some thin gruel given. Some cathartic, usually castor oil, is required with a severe attack. A child of five years should have one tablespoonful; it may be given with orange juice or in soda water, never in milk.

If the patient is an infant, less milk should be used in the formula, the sugar omitted and the milk should be boiled. In severe attacks with frequent foul stools, all food should be stopped for at least twelve hours and all milk for a longer time, and the bowels freely moved by a cathartic.

Why is a cathartic necessary if the movements are already frequent?

Such movements are nearly always due to an irritation in the bowel, set up by the fermenting food which has not been digested. The diarrhea is Nature's effort to get rid of the irritant. Nothing to stop the movements should be given until the bowels have been thoroughly cleared by the treatment mentioned.

BAD HABITS

What are the most common bad habits of young children?

Sucking, nail-biting, dirt-eating, bed-wetting, and masturbation.

What do children suck?

Most frequently the thumbs or fingers, sometimes the clothing or blanket, often the "pacifier" or rubber nipple.

When is this habit most frequently seen?

It begins in quite early infancy, and if not broken may last until children are six or seven years old.

Is the sucking habit a harmful one?

When persisted in it may produce a misshapen mouth or fingers. It constantly stimulates the flow of saliva and certainly aggravates disturbances of digestion during which the sucking habit is likely to be practiced. It may lead to thrush or other forms of infection of the mouth. It is not necessary as a means of quieting a child, though it may in some degree cover up the consequences of bad feeding or bad training. On no account should the habit of sucking the pacifier be allowed as a means of putting children to sleep, or of quieting them while restless from dentition or indigestion.

How is the sucking habit to be controlled?

One should be sure in the first place that the constant sucking of fingers is not due to hunger from insufficient food; at such times the sucking habit is especially likely to be practiced. Sucking of the hands may often be controlled by wearing mittens or fastening the hands to the sides during sleep. In more obstinate cases it may be necessary to confine the elbows by small pasteboard splints to prevent the child from bending the arm so as to get the hand to the mouth.

When are nail-biting and dirt-eating seen, and how are they to be controlled?

These habits belong especially to children over three years old. They are seen particularly in those who are excessively nervous or whose general health is below par; sometimes in those who develop serious nervous disease later in life. Children with such tendencies should be closely watched, and every means used to break up these habits early. Dirt-eating is a morbid craving which is rarely seen in a perfectly normal child.

At what age may a child generally be expected to go without wetting the bed during the night?

Usually at two and a half years, if taken up late in the evening. Some children acquire control of

the bladder at night when two years old, and a few not until three years. After three years habitual bed-wetting is abnormal.

How should a young child addicted to bed-wetting be managed?

At three or four years of age, punishments are sometimes useful, especially when it seems to depend more upon the child's indifference than anything else. They are of no value in older children, rewards being much more efficacious. In all cases one should give a child plenty of milk and water early in the day, but no fluids after 4 P. M., the supper being always of solid or semi-solid food. The child should be taken up regularly at ten o'clock or thereabouts. It often happens that the formation or continuance of the habit is due to the child being anemic or otherwise in poor general condition, to some irritation in the urine, or in the genital organs. Unless the simple means mentioned are successful the child should be placed under the charge of a physician.

What is masturbation?

It is the habit of rubbing the genital organs with the hands, with the clothing, against the bed, or rubbing the thighs together. Sometimes a child sits upon the floor, crosses his thighs tightly and rocks

backward and forward. Many of these things are passed over lightly and are regarded for months as simply a "queer trick" of the child. It may be seen at any age, even in those not more than a year old. In infancy it is more frequent in girls. It occurs particularly in very nervous children.

To what does masturbation lead?

It increases the nervousness of the child, exaggerates the lack of self-control and when practiced frequently often leads to impairment of the general health, lowered moral sense and sometimes to other sexual propensities.

Does it cause feeble-mindedness?

There is no evidence that this is the case. Feeble-minded children very commonly practice this habit but it is to be regarded as the result rather than the cause of the mental condition.

How should a child with this habit be treated?

Masturbation is the most injurious of all the bad habits, and should be broken up just as early as possible. Children should especially be watched at the time of going to sleep and on first waking. Punishments and mechanical restraint are of little avail except with infants. With older children they

usually make matters worse. Rewards are much more efficacious. It is of the utmost importance to watch the child closely, to keep his confidence, and by all possible means to teach self-control.

Some local cause of irritation is often present, which can be removed. Medical advice should at once be sought.

VACCINATION

Nowadays when small-pox occurs so seldom is it necessary to have every child vaccinated?

It should by all means be done. It is only by the practice of general vaccination that small-pox is kept down. In countries or in communities where vaccination is neglected, general outbreaks of small-pox occur every now and then just as in olden times.

What is the best time for vaccination?

The time usually selected is from the third to the sixth month. It may be deferred in a very delicate child who is not likely to be exposed to small-pox, or in a child suffering from any form of skin disease.

Which is preferable for vaccination, the arm or the leg?

The part which can be most easily protected and kept at rest is to be chosen. In infants who do not

yet walk or creep, the leg is to be preferred; in older children, in most circumstances, the arm. If older children are vaccinated on the leg, they should not be allowed to walk much while the vaccination is active.

When should vaccination be repeated?

An unsuccessful vaccination proves nothing and should be repeated in two or three weeks. If successfully vaccinated in infancy, a child should invariably be revaccinated before puberty. If exposed or likely to be exposed to small-pox at any time vaccination should be repeated.

THE TEETH

Why is the care of the teeth so important in childhood?

Good teeth are essential to health and good looks. Bad teeth are a menace to the general health, and no amount of dentistry in later life can make up for the effects of early neglect. If the habit of properly caring for the teeth is formed in childhood it is likely to continue through life.

What are the important causes of decayed teeth?
The principal one is that the teeth have not been

kept clean. There is however no doubt that excessive indulgence in sweets also increases dental decay, especially when cleanliness has been neglected.

Do the first set of teeth also require attention?

If they are neglected the second or permanent set are likely to be seriously injured. Teeth with small cavities should be filled; those with large cavities should be extracted.

What harm do decayed teeth do?

They interfere with proper chewing of the food, which makes digestion more difficult; absorption of poison from such teeth is often the cause of serious disease of the glands, the joints or the heart; besides, decayed teeth cause bad breath, spoil a child's looks and lead later to toothache and much discomfort. Every child therefore should have his own tooth-brush and be taught to brush his teeth thoroughly at least once a day with tooth powder or paste.

ADENOIDS

What are adenoids?

The name is given to a lymphatic, glandular mass which is situated back of the nose in the upper part of the throat.

Do all children have adenoids?

They are one of the normal structures of the throat.

Under what circumstances do they require removal?

When they become much enlarged or are the seat of disease.

What are the signs of much enlargement?

Mouth breathing, restlessness at night, or snoring respiration during sleep, and in marked cases narrowing or sinking in of the lower part of the chest, owing to obstructed breathing and interference with the general health and normal growth. Also, there may result a narrowing of the dental arch of the upper jaw leading to deformity of the mouth.

What are the signs of diseased adenoids?

The most common are, frequently recurring acute head colds or a chronic nasal discharge, and swelling of the glands of the neck. There may also be attacks of earache or more serious inflammation of the ears, resulting in abscesses which may discharge for a long time.

Should all children have adenoids removed?

When either group of symptoms mentioned above is present this should be done, and if both groups are

present removal is imperative. When none of these symptoms exist operation is unnecessary.

At what age should the operation be done?

The time of operation is determined not so much by the age of the child as the urgency of the symptoms. It may be necessary at any age even in an infant under one year. Generally speaking, operation should be deferred until the child has passed the age of two or three years, as the chances of recurrence are somewhat less than when the operation is done in infancy

Are adenoids likely to recur after removal?

If the operation is properly performed this occurs only in a small proportion of the cases, perhaps 10 or 15 per cent.

ENLARGED TONSILS

Under what circumstances should the tonsils be removed?

The symptoms requiring removal are much the same as those described with adenoids. The tonsils should be removed if they are so large that they obstruct respiration, or by inspection are seen nearly to meet in the throat. Also, when they are the seat of chronic

disease. Often they are ragged, irregular, soft and spongy, although they may not be greatly enlarged.

Is it sufficient to amputate the tonsils, or should they be completely removed?

At present surgeons are generally agreed that in cases requiring operation, the complete removal of the tonsils is to be preferred.

Are there any dangers from operation upon tonsils or adenoids?

If the operation is properly performed, the risk is very slight indeed, but in rare cases serious hemorrhage may occur.

BLOWING THE NOSE

What is the proper method of blowing the nose?

First one nostril should be compressed when the blowing is done, then the other as the blowing is repeated. Never should both nostrils be compressed at the same time while the child blows forcibly.

What harm may this do?

Forcible blowing with both nostrils compressed is likely to force secretions and germs into the middle ear and serious inflammation may follow. This is an

important matter and all children should be properly trained in this respect from infancy.

TAKING COLD

Why do some children “take cold” so readily?

All children are more susceptible than adults; some are especially so because of the climate in which they live, others because of inherited tendencies which are marked in some families. Susceptible children are often made more so by the manner in which they are clothed, housed and fed. Large tonsils and adenoids also make children more liable to colds.

What can be done to lessen this susceptibility?

Large adenoids and tonsils should be removed; this alone rarely cures the condition, but it usually does diminish the trouble. A dry climate, either warm or cold, is beneficial to most children. The worst cases to relieve are in those children with a strong inherited tendency to colds.

What can be accomplished by diet, clothing and general management?

Large amounts of starchy food (cereals, etc.), sugar and sweets are apt to increase the trouble. The use of more fats, particularly in the form of cod liver

oil, tends to diminish it. Most susceptible children are benefited by taking cod liver oil throughout the entire cold season.

The clothing is apt to be too heavy. Only under-clothing of medium weight should be worn and the outer clothing should be light while in the house. Even when out of doors the clothing should not be so heavy as to cause the child to perspire freely with his exercise.

The nursery should be kept cool. A temperature of 65° or 66° F. is best. When kept at a higher temperature a child perspires at his play and becomes in consequence more sensitive than ever.

Sleeping rooms should be cool, and plenty of fresh air allowed unless the child is suffering from a fresh cold.

A morning cold sponge bath is of great assistance. It should be given in a warm room, and the child should stand in a tub with sufficient warm water to cover his feet. A sponge filled with very cold water should then be squeezed three or four times over his neck, shoulders and chest. For the best results the water used must be quite cold (50° to 55° F.) and the bath very short—less than half a minute. The child is then removed from the bath and rubbed briskly with a coarse towel until he is in a glow. A good reaction must be secured or no benefit follows. If the child

remains blue and cold the bath has been improperly given and should not be continued in the same way.

A warm soap-and-water bath may be given at night two or three times a week just before the child is put to bed.

Are colds contagious?

Without doubt colds are often spread in this way. Contact with other children or adults suffering from colds should be avoided so far as possible. A delicate and susceptible child should be protected as carefully as from the common contagious diseases.

How are children with acute colds to be treated?

With older children it is always well to begin with a dose of castor oil or some other cathartic, to reduce the food and keep the child indoors. If there is fever (a temperature over 100.5° rectal) the child should be put to bed and kept there so long as the temperature remains above normal.

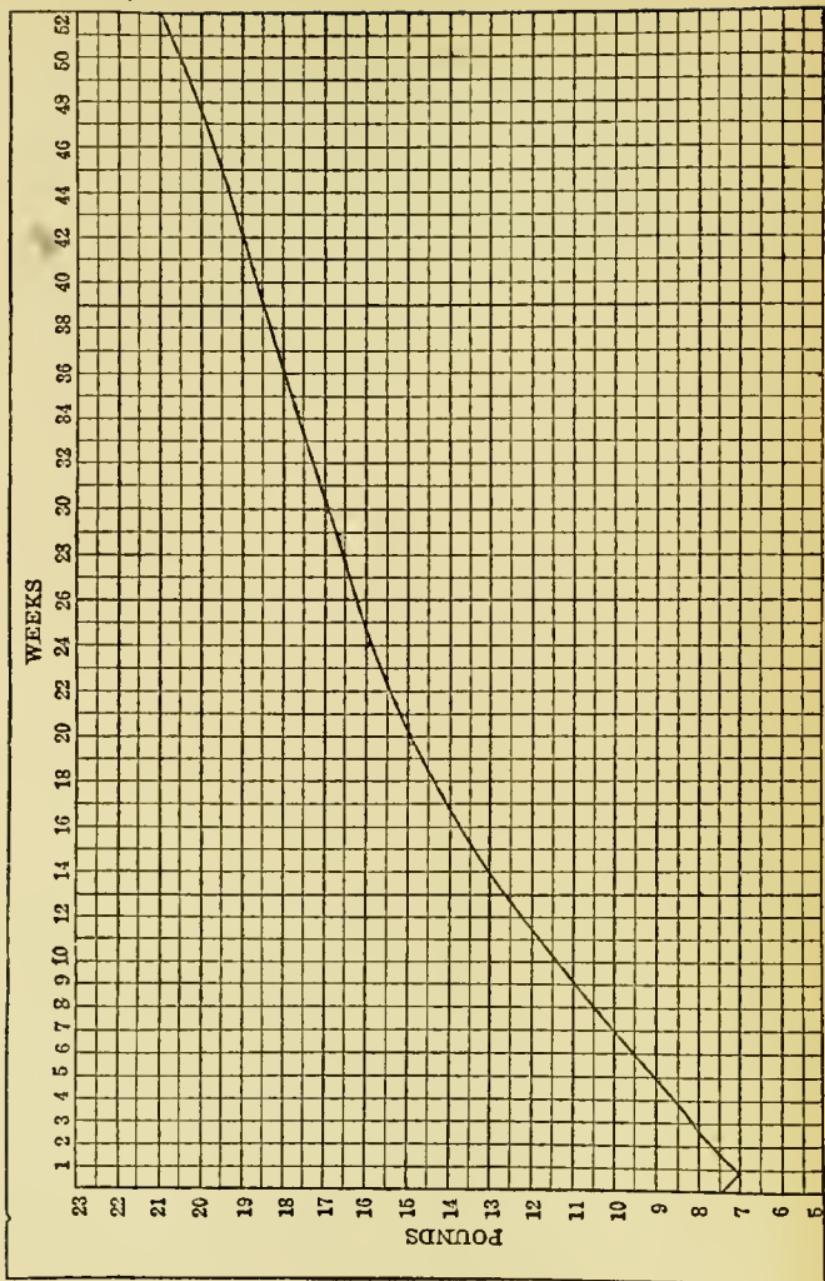
With infants, essentially the same plan should be followed, and the child kept in bed for the first two days even if there is little or no fever. A warm room is to be preferred to wide open windows. Water should be freely given, but, with all severe colds, a considerable reduction in the food should be made.

The free use of drugs as commonly followed in

domestic practice seldom if ever shortens the attack, but is almost certain to upset the digestion.

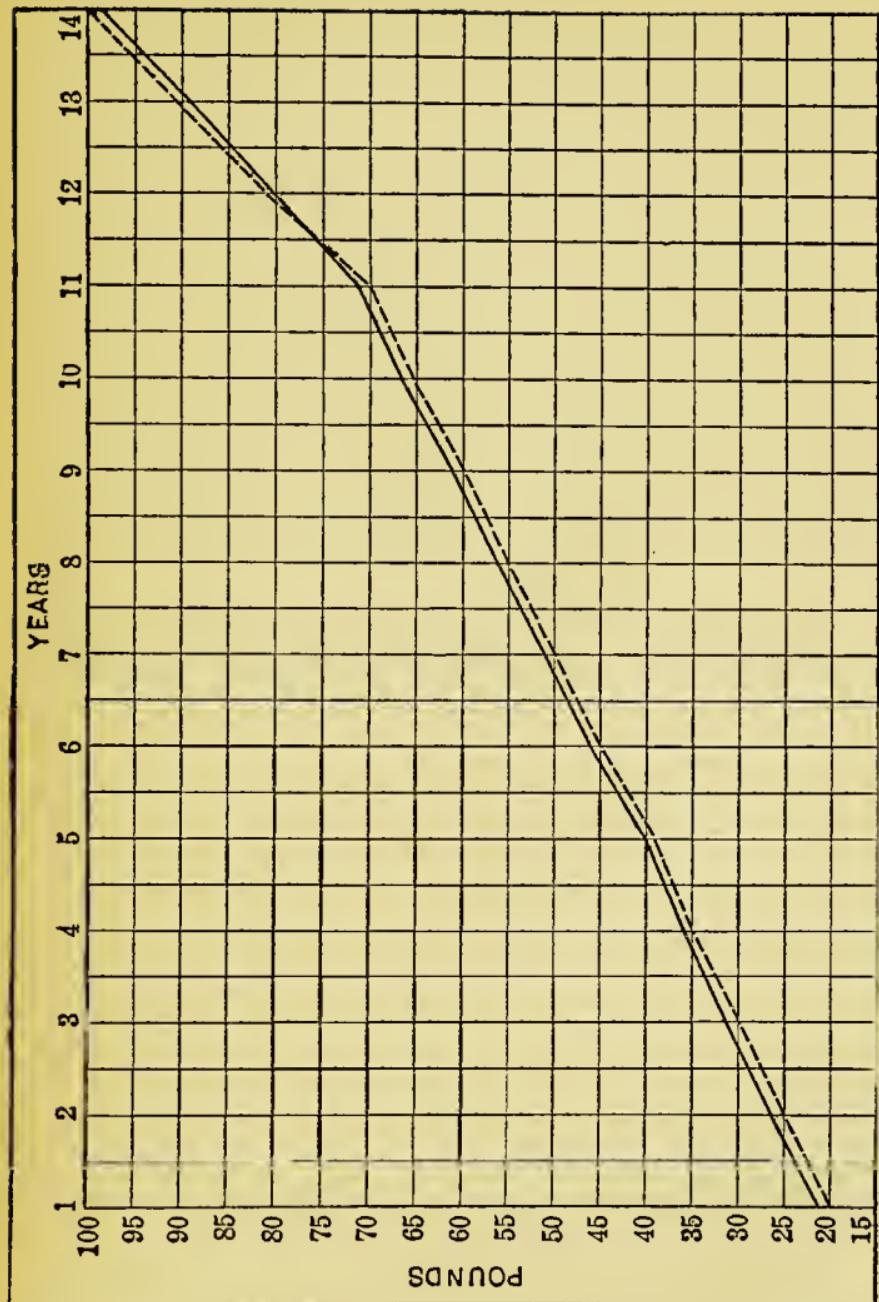
If these simple hygienic measures are employed, most colds, even severe ones, are soon recovered from; but if they are neglected, serious complications are likely to result.

CHART I



Weight chart for the first year; the curved line indicates the average rate of gain.

CHART II



Weight, one to fourteen years.

The upper line indicates the average rate of gain for boys; the lower (dotted) line that for girls.



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